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Off-Design Computer Code for Calculating the Aerodynamic Performance of Axial-Flow Fans and Compressors

User's Manual

James F. Schmidt
NYMA, Inc.
Brook Park, Ohio

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SUMMARY

An off-design axial-flow compressor code is presented and is available from COSMIC for predicting the aerodynamic performance maps of fans and compressors. Steady axisymmetric flow is assumed and the aerodynamic solution reduces to solving the two-dimensional flow field in the meridional plane. A streamline curvature method is used for calculating this flow-field outside the blade rows. This code allows for bleed flows and the first five stators can be reset for each rotational speed; capabilities which are necessary for large multi-stage compressors. The accuracy of the off-design performance predictions depend upon the validity of the flow loss and deviation correlation models. These empirical correlations for the flow loss and deviation are used to model the real flow effects and the off-design code will compute through small reverse flow regions.

The input to this off-design code is fully described and a user's example case for a two-stage fan is included with complete input and output data sets. Also, a comparison of the off-design code predictions with experimental data is included which generally shows good agreement.

1.0 INTRODUCTION

If a reliable off-design axial compressor code is available for predicting the performance maps of compressor designs, costly and time consuming testing can be kept to a minimum. In addition, reliable flow property prediction at off-design speeds can be used as a good starting point for full three dimensional flow analyses to reduce their long computing times. Off-design compressor performance, which is the performance of a compressor at flow conditions and rotational speeds other than the design point is an important aspect of compressor design. A good design for a multistage axial compressor requires an adequate part-speed performance with sufficient part-speed stall margin and determination of required starting bleed flows along with any guide vane or stator resets needed to better match the stages (Ref. 1). The off-design flow analysis is different from the compressor design analysis in that the compressor blade geometry is now fixed and the off-design requirement is to determine the compressor performance for a range of speeds and weight flows i.e. to determine the compressor map.

This off-design, two-dimensional, axial compressor code was originally developed by James Crouse as an analysis code to be used in tandem with his compressor design code (Ref. 2). This off-design code has never been published and many modifications to the original code have been made over the last 12 years. In order to successfully use this off-design code, the compressor design code must first be used to generate the necessary blade geometry block of data that is part of the required input to the off-design code. Actually, the general design procedure is to first produce a preliminary initial blade design with the compressor design code. In cases where the compressor blade design is obtained from an old design or an outside source, the compressor design code must be used to duplicate the blade design and obtain the necessary input to the off-design code.

Steady, axisymmetric, two-dimensional flow in the meridional plane is as-

sumed and the equations of motion as developed in reference 1 are only applicable for calculation stations outside the blade rows, Also, empirical correlations for the flow losses and deviation angle are used to model real flow effects and the off-design code will compute through small reverse flow regions.

The blade geometry description is essentially the same as that for the compressor design code (Ref. 2) and the aerodynamic solution uses a streamline curvature method for calculating the flow at stations outside the blade rows. The aerodynamic calculation structure for the off-design code is set up such that the aerodynamic flow field and selected streamlines are recalculated for each new rotational speed with the flow rate increased to the choke condition, and then decreased to the stall condition. In addition, this code has the capability to include bleed flows as well as reset adjustments for the first five stators.

The purpose of this report was not intended to give a detailed description of the development of the off-design code but to give the user a manual for properly using this code.

A user's example case for a two-stage fan is included to demonstrate the necessary input required to run this off-design code as well as the resulting output produced by this code. A comparison of the off-design code performance predictions with experimental data for this two- stage fan is made with and without stator resets.

2.0 OFF-DESIGN CALCULATION PROCEDURE

Similar to the compressor design code (Ref. 2) the off-design code is separated into three main regions of calculation: the input and setup, the aerodynamic flow solution and exit calculation routines. In addition, a reset or recalculation routine is included for a recalculation of the flow field and streamlines as the flow is increased toward the choke point and decreased toward the stall condition. This general procedure is repeated for each desired rotational speed.

For the input and setup routine the input data are read and interpreted and the streamlines are located on the basis of annulus area. For the flow field solution phase the equations of motion are satisfied in the meridional ($r-z$) plane at calculation stations along the compressor flow path (see Figure 1). At the stations, the equations of motion and overall flow continuity are satisfied using a streamline curvature method of solution. The exit calculation routine makes the final calculations and prints the output. First the mass averaged parameters for the individual and cumulative compressor blade rows are calculated and printed and then the detailed tabulated local values (tip to hub) of the aerodynamic and blading parameters for each calculation stations are computed and printed. A recalculation phase or controlling main routine is used to recalculate the flow field and streamlines as the inlet flow rate is increased toward the choke point and decreased toward the stall condition. This procedure is repeated for each desired compressor rotational speed.

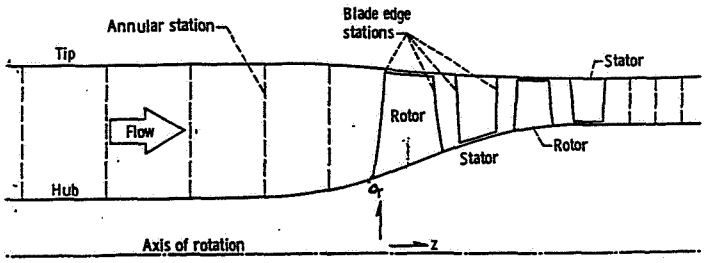


Figure 1. - Calculation stations in compressor flow path.

3.0 INPUT DATA

The basic meridional (r, z) computational plane is shown in Figure 1 for a typical compressor configuration. As indicated in Figure 1 the calculation stations are located at the blade-row leading and trailing edges and at other annular locations needed for proper determination of the streamlines. The input data are divided into two categories of input: general input data and calculation station and blade row input data. All the input parameters and options as well as the input data format are described in Appendix B. The mathematical symbols used for defining these input parameters are given in Appendix A. Except for a few modifications the general input data for the off-design code are similar to the general input data for the design code (Ref. 2).

3.1 General Input Data

The input data consist of the following information:

1). Number of desired compressor speeds.
2). Normalized range for the choke region.
3). Normalized step increment for the choke region.
4). Normalized range for the stall region.
5). Normalized step increment for the stall region.
6). Fraction of desired rotation speeds.
7). Stator reset angle for first 5 stators.
8). Number of streamlines.
9). Number of blade rows.
10). Number of annular stations.
11). Compressor rotational speed.
12). Inlet flow rate.
13). Desired compressor pressure ratio.
14). Gas molecular weight.
15). Coefficients for Cp as a fifth-degree polynomial function of temperature.

16). Upstream values of total temperature, total pressure, and inlet tangential velocity for each streamline.

17). Streamtube mass flow fractions between streamlines.

18). Sets of points to define tip and hub casing contours.

19). Sets of blade element profile loss parameters that are tabulated as functions of blade element loading parameter (D Factor) and fraction of passage height.

Except for the above first seven input data items the remaining list of the general input data is identical to the general input data for the design code (Ref. 2). Therefore, once the design code is run most of the general input data for the off-design code are already known.

3.2 Calculation Station and Blade Row Input

The input data for the annulus calculation stations and blade rows are read in order from annulus inlet to outlet. The calculation stations and blade row input consist of the following information:

I. Type of calculation station: annular, rotor or stator.

If annular - only one line.

1). The tip and hub axial locations.

2). The tip and hub blockage displacement thickness.

3). The cumulative bleed fraction of inlet flow

If rotor - first line.

1). The tip and hub stacking-point axial locations.

2). The inlet tip and hub blockage displacement thicknesses.

3). The cumulative bleed fraction of inlet flow.

If rotor - second line.

1). Number of streamlines (maximum of 11).

2). Loss set number (maximum of 9).

3). Blade definition index.

4). Option parameter for part span shroud (IDAMP = 0 for no damper).

5). The cumulative bleed factor of inlet flow.

6). Number of blades.

7). The outlet tip and hub blockage displacement thicknesses.

8). The angle of stacking axis tilt (degrees) or lean in circumferential direction (r, θ plane).

9). The estimated cumulative stage adiabatic efficiency for the first iteration.

10). Desired cumulative energy addition factor through particular rotor to total energy addition of compressor. The last rotor must have CRENGY = 1.0 to meet the input total pressure ratio.

If stator - first line.

1). The tip and hub stacking-point axial location.

2). The inlet tip and hub blockage displacement thicknesses.

3). The cumulative bleed fraction of inlet flow.

If stator - second line.

1). Number of streamlines (maximum of 11).

2). Loss set number (maximum of 9).

3). Blade definition index.

4). Option parameter for part span shroud (IDAMP = 0 for no damper).

5). The cumulative bleed fraction of inlet flow.

6). Number of blades.

7). The outlet tip and hub blockage displacement thicknesses.

If IDAMP > 0, then the following information line needs to be included after the second line of the rotor or stator input.

1). Radial location of the leading edge or the part-span shroud.

2). Slope angle of the damper centerline in the meridional view.

3). Chord length of mid-span shroud.

4). Maximum thickness-to-chord ratio of damper.

5). Leading edge to chord ratio of a part-span shroud.

6). Trailing edge to chord ratio of a part-span shroud.

The basic blade row geometry block of information is included after the second line of the rotor or stator blade row input. This basic blade row geometry data is automatically obtained using an option in the compressor design code (Ref. 1). Again, as previously stated, the order and format for all of the off-design input is shown in Appendix B along with a complete description of the input parameters.

4.0 AERODYNAMIC FLOW SOLUTION

The aerodynamic flow solution determines the velocity diagrams and fluid state properties on the calculated streamlines at the annular and blade row inlet and exit stations. The flow solution results from an inner and outer iteration scheme. For the outer loop iteration the calculated variables are the stagnation temperature and pressure, the tangential component of velocity, and the streamline location, slope, and curvature. The inner loop iteration is the spanwise flow calculation, solving continuity and radial equilibrium at each station, where the axial velocity distribution is calculated as the outer loop variables are held fixed and then the streamline location is reset. The overall procedure is station marching from inlet to outlet with streamline parameters fixed and a maximum of 20 cycles to converge to a solution.

4.1 Flow Loss and Deviation Prediction Models

Accuracy of the off-design performance predictions depends upon the validity of the flow loss and deviation correlation models. The total loss coefficient is defined as:

$$\overline{w} = \frac{(PO'_i)_2 - PO'_2}{PO'_1 - p_1} \tag{1}$$

In this code the losses consist of two additive components: shock losses and all other losses (considered as a profile loss). The shock loss is assumed to be approximately equal to the computed normal shock loss divided by the square of the inlet relative Mach number. The profile loss coefficient is given by:

$$\overline{w}_p = \overline{w} - \overline{w}_s \tag{2}$$

where $\overline{w}_s$ is the shock loss coefficient.

The profile loss is represented by a correlation parameter as a function of passage height and aerodynamic blade loading. The values for this loss parameter correlation are input in tabular form in the input data and are usually called

loss parameter data sets. The aerodynamic blade loading parameter (more commonly called D-factor) is defined as:

$$D = 1 - \frac{V_2'}{V_1'} + \frac{[(rV_\theta)_2 - (rV_\theta)_1]}{\sigma(r_1 + r_2)V_1'} \tag{3}$$

where V_θ is the tangential flow velocity and σ is the blade element solidity and the loss parameter in the input table is defined as:

$$\frac{\overline{w}_p \cos\beta_2'}{2\sigma} \tag{4}$$

Loss parameter data sets determined from experimental data over many years are often stored in data banks for different types of compressors.

In this off-design code a deviation subroutine is used to iterate for the blade row outlet flow angle and thus with fixed blade geometry determines the deviation angle. A correction to Carter's deviation angle rule (Ref. 1) due to changes in blade camber in the streamline direction was developed by James Crouse in his original development of the off-design code. This correlation for the deviation coefficient used in the iteration for the outlet blade flow angle is given by:

$$\begin{aligned} C_m = {} & (0.219 + \gamma(0.051085 + 0.088915\gamma)) \\ & \times \{1.620 + \gamma(0.72365 - 0.27871\gamma) \\ & + \phi[-1.415 + \gamma(1.85240 - 0.75964\gamma) \\ & + \phi(0.352 - \gamma(0.810816 - 0.40444\gamma))]\}^{2.4} \end{aligned}$$

where: γ is the blade setting angle (rad.), c is the chord, and ϕ is the ratio of front to total camber of each blade element.

These loss and deviation coefficient correlations are the primary unknown factors in the off- design code. Generally, the off-design code predictions compare quite well with experimental data for fans and lightly to moderately loaded

multi-stage compressors. However, for highly-loaded, large multistage compressors very large reset guide vane and stator adjustments are needed to match the stages, especially at low wheel speeds. These large reset adjustments greatly increase the pressure losses and deviation angles in these front stators and guide vane. Therefore, the loss and deviation correlations need to be improved for highly-loaded, large, multistage compressors.

5.0 EXIT CALCULATION ROUTINE

After the iterated solution for the aerodynamic flow field is obtained the off-design code calculates and prints the overall mass-averaged parameters for the individual and cumulative compressor blade rows. In addition, the detailed tabulated local values (tip to hub) of the aerodynamic and blading parameters for each calculation station are computed and printed.

6.0 CONTROLLING RECALCULATION MAIN ROUTINE

The first flow field and performance calculation for this off-design code is the design point case and the results should compare very well with the results for the design code (Ref. 2). Then, the step-choke increment is used to calculate an increased flow rate and the flow field with new streamlines are recalculated. This process is repeated until the input range-choke value is reached and all the performance calculations on the choke side are completed. A word of caution is needed at this point because if too large a value for the input range-choke is used, the code will try to calculate a very hard choke condition which may cause a divide by almost zero and other numerical difficulties. After the choke-side calculation is completed, the off-design code then uses the step-stall increment to reduce the flow rate from the design value and the flow field with new streamlines are calculated. This process on the stall side is repeated until the desired input range-stall value is reached. Again, caution is needed because if too large a value for the input range-stall is used, the code will try to calculate a stall condition with very high D-factors (Eq. 3) resulting in severe numerical difficulties which can stop the code. Now, all the flow-field overall and blade row performance calculations have been obtained for one complete speedline (100 percent or fraction of speed of 1.0). This same general procedure is repeated for additional speedlines except that instead of marching away from design point values the controlling main routine calculates a reduced flow rate and rotational speed for each additional desired input fraction of speed. Speedlines greater than 100 percent or fraction of speed greater than 1.0 can also be calculated.

7.0 USER EXAMPLE COMPRESSOR CASE

A user's example case for a two-stage fan (Ref. 3) shows the necessary detailed input data set needed to run this off-design code (see Table 1). This two-stage fan example case is the same example case that was used for the compressor design code (Ref. 2). In addition, the off-design output prediction results for this example case with and without stator resets are shown in Table 2 and Table 3, respectively. A comparison of the off-design predictions is generally in good agreement with the experimental data (see Fig. 2), especially for the 70 percent speed case.

This compressor off-design computer code (written in Fortran) along with the example input case can be obtained from COSMIC, 112 Barrow Hall, University of Georgia, 30601. The COSMIC program number is LEW-16176.

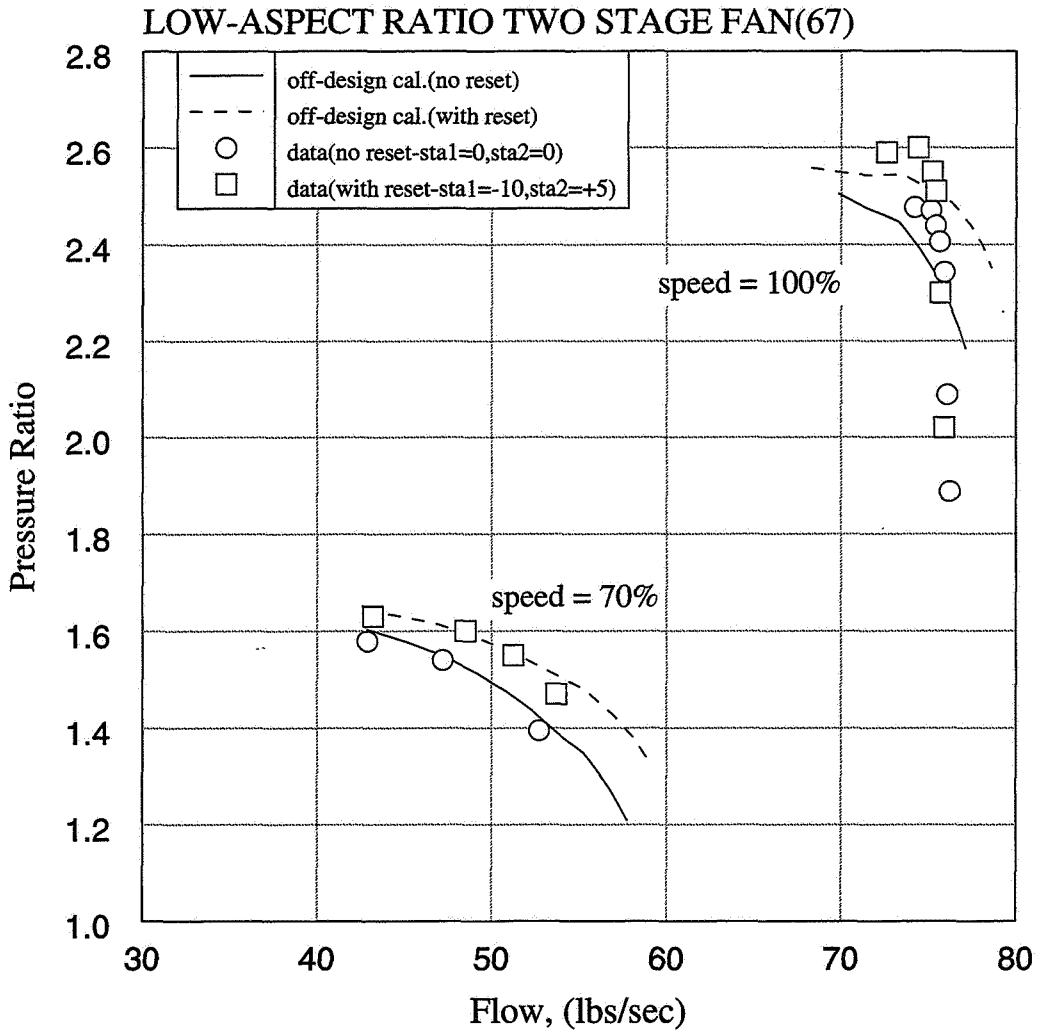


Figure 2 - Comparison of the off-design code performance predictions with experimental data for a low-aspect-ratio two-stage fan with and without stator reset.

8.0 ACKNOWLEDGEMENT

The original version of this off-design code was developed by James Crouse while he was an employee of NASA. Even after he left NASA James Crouse has provided several corrections and additions as well as many suggestions to improve this code and his valuable help is greatly appreciated.

9.0 REFERENCES

1. Johnson, I.A., and Bullock, R.O. eds., "Aerodynamic Design of Axial-Flow Compressors", NASA SP-36, 1965.

2. Crouse, J.E., "Computer Program for Aerodynamic and Blading Design of Multi- Stage Axial-Flow Compressors", NASA TP-1946, 1981.

3. Urasek, D.C., Gorrell, W.T., and Cunnam, W.S., "Performance of Two-Stage Fan Having Low-Aspect Ratio, First-Stage Rotor Blading", NASA TP-1493, 1979.

APPENDIX A

Symbols

A	annulus area, ft^2
c	blade chord, in.
$C_p(T)$	specific heat function for constant pressure, ft/sec^2 $^\circ R$
C_m	empirical correlation for the deviation angle coefficient
D	blade element diffusion factor
I	integer station index
i	incidence angle, deg.
J	integer streamline index
K	ineger loss set index
k	curvature in curvilinear co-ordinate system
L	distance along chord line, in.
M	Mach number
m	streamline direction in meridional plane, in.
p	static pressure, lb/ft^2
PO	stagnation pressure, lb/ft^2; input values; lb/in^2
$\mathcal{R}$	gas constant for air, ft-lb/slug °R
r	radius from axis of rotation, in.
S	blade element path distance, in.
TO	stagnation temperature, °R
t	static temperature, °R; also, blade element thickness, in.
U	local blade velocity, ft/sec.
V	velocity, ft/sec.
W	weight flow, ft/sec.
z	axial distance, in.

α	angle of streamline with reference to axial direction, deg.
β	flow angle relative to meridional direction, deg.
γ	blade setting angle, deg.
δ	deviation angle, deg.
θ	circumferential direction, rad
ϕ	ratio of front to total camber
κ	blade angle relative to local conic co-ordinate ray, deg.
ρ	local density, slugs/ft^3
σ	local blade solidity, ratio of chord to circumferential spacing
$\overline{\omega}$	total loss coefficient
$\overline{\omega}_s$	shock loss coefficient
$\overline{\omega}_p$	profile loss coefficient

Subscripts:

I	calculation station index
i	ideal value, as by an isentropic process
le	leading edge
m	streamline dirction in meridional plane; also, maximum blade thickness
o	initial value
t	transition point
te	trailing edge
θ	circumferential direction
1	blade row inlet
2	blade row outlet

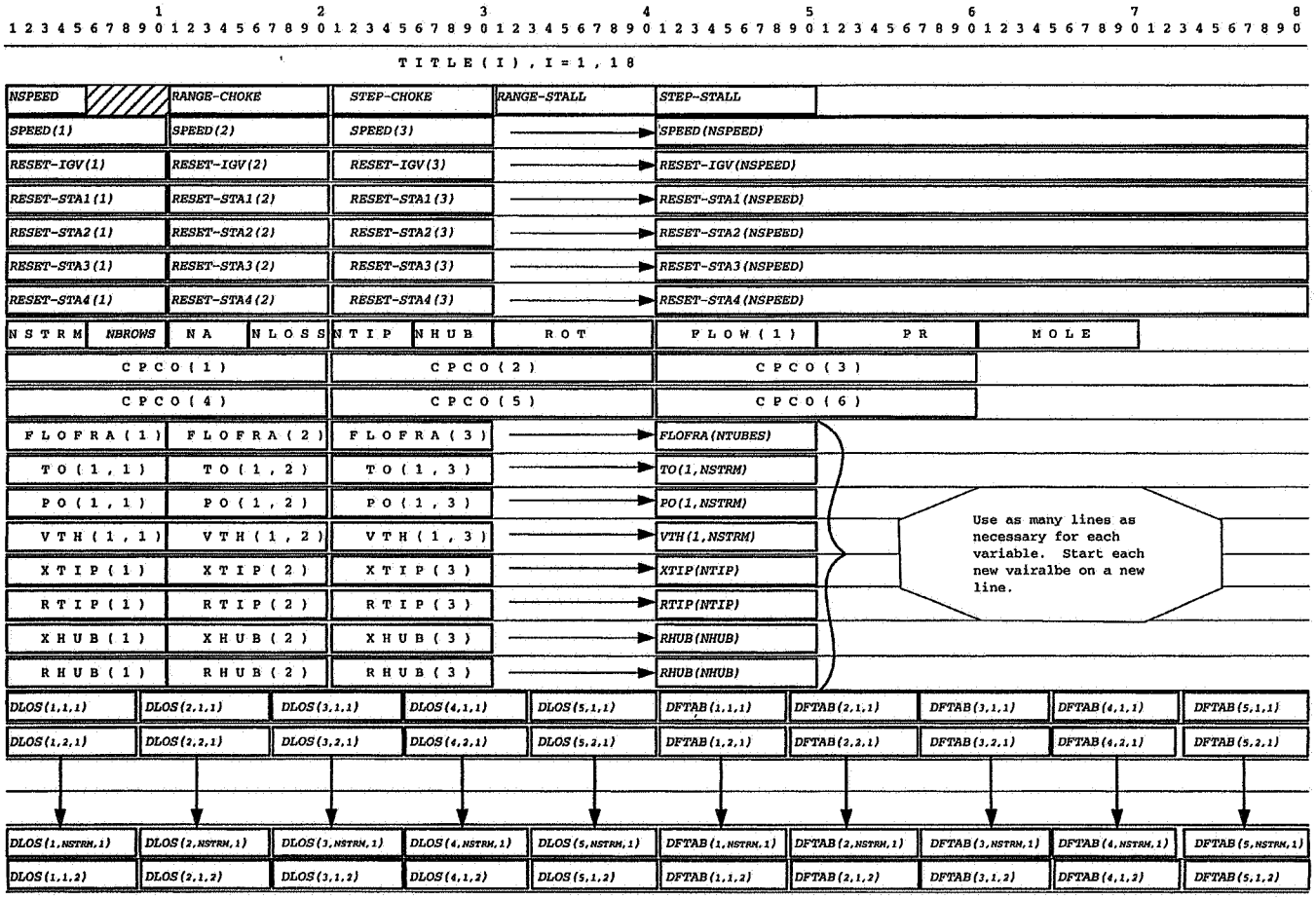
Superscripts:

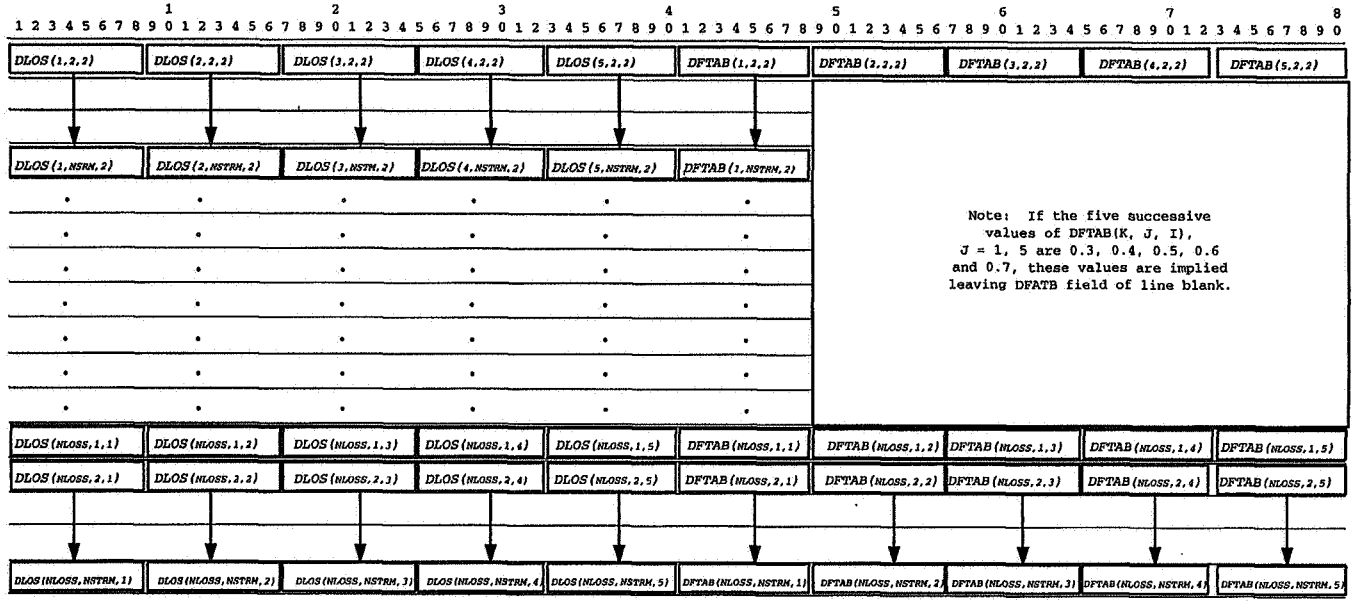
$( )'$	relative to rotor

APPENDIX B

Input Parameters for the Off-Design Compressor Code

The input variables for the off-design compressor code and various options are described in this Appendix. The calculation station and blade row data sets are input in the order in which they occur in the compressor. The format for the input data is given in the following block diagrams.





AA	Z(I,1)	Z(I,NSTRM)	BT(I)	BH(I)	BLEED(I)

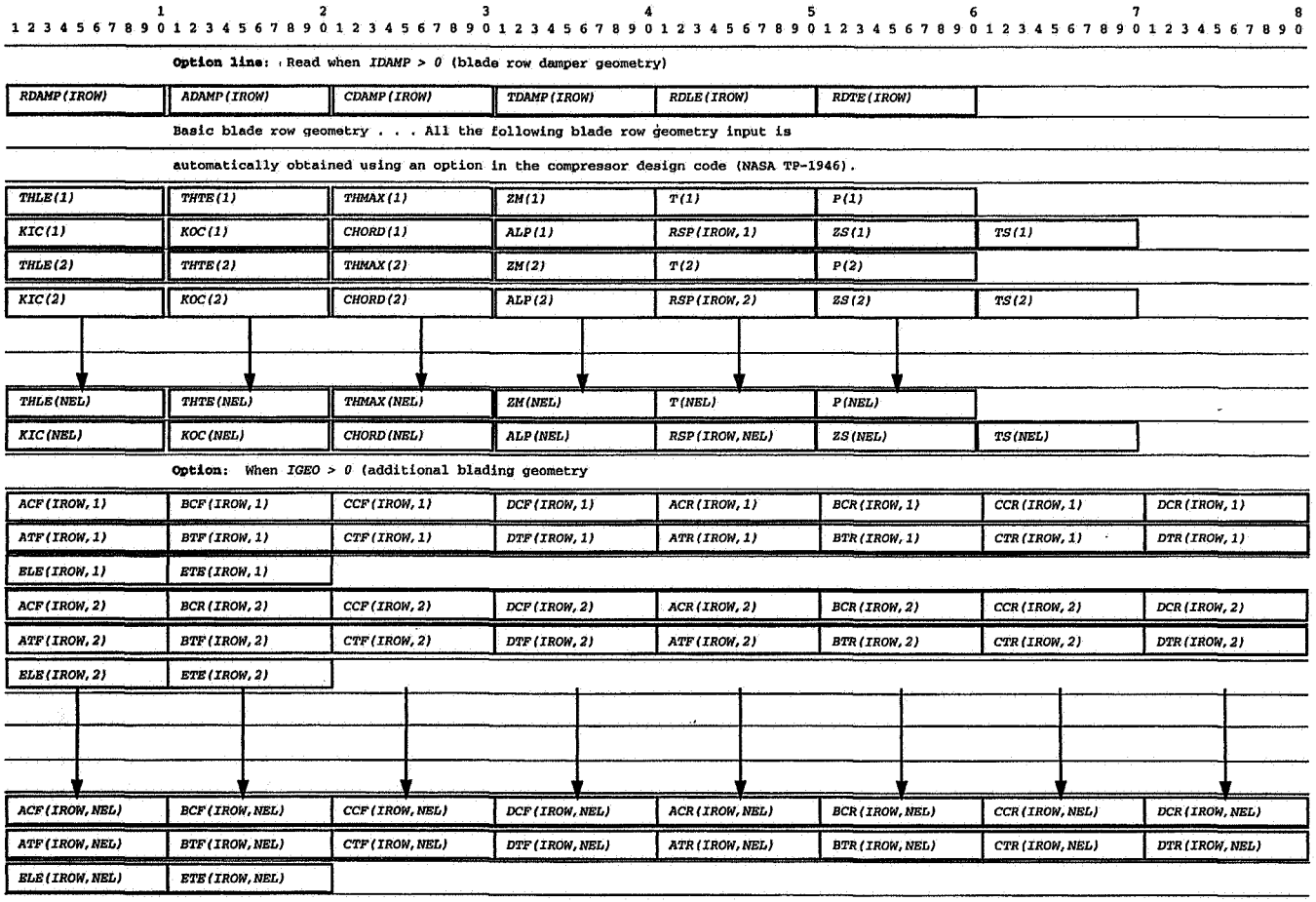
This is either the only line for an annular data set, or the first line of a blade row data set. If *AA = ANNULAR*, *ISTN(I)* is set to *0* and the data set is considered an annular station.

Option line: Read when *AA = ROTOR* (*ISTN(I) = +1* at the inlet station and *2* at the outlet station)

NEL	ILOSS	IGEO	IDAMP	BLEED(I)		BLADES(IROW)	BT(I+1)	BH(I+1)	TILT(IROW)	EFF(IROTOR)	CRENGY(IROTOR)

Option line: Read when *AA = STATOR* (*ISTN(I) = -1* at the inlet station and *-2* at the outlet station)

NEL	ILOSS	IGEO	IDAMP	BLEED(I)		BLADES(IROW)	BT(I+1)	BH(I+1)	TILT(IROW)


1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
Option line: Read when IDAMP > 0 (blade row damper geometry)
RDAMP(IROW)
ADAMP(IROW)
CDAMP(IROW)
TDAMP(IROW)
RDLE(IROW)
RDTE(IROW)
Basic blade row geometry . . . All the following blade row geometry input is
automatically obtained using an option in the compressor design code (NASA TP-1946).
THLE(1)
THTE(1)
THMAX(1)
ZM(1)
T(1)
P(1)
KIC(1)
KOC(1)
CHORD(1)
ALP(1)
RSP(IROW,1)
ZS(1)
TS(1)
THLE(2)
THTE(2)
THMAX(2)
ZM(2)
T(2)
P(2)
KIC(2)
KOC(2)
CHORD(2)
ALP(2)
RSP(IROW,2)
ZS(2)
TS(2)
THLE(NEL)
THTE(NEL)
THMAX(NEL)
ZM(NEL)
T(NEL)
P(NEL)
KIC(NEL)
KOC(NEL)
CHORD(NEL)
ALP(NEL)
RSP(IROW,NEL)
ZS(NEL)
TS(NEL)
Option: When IGEO > 0 (additional blading geometry
ACF(IROW,1)
BCF(IROW,1)
CCF(IROW,1)
DCF(IROW,1)
ACR(IROW,1)
BCR(IROW,1)
CCR(IROW,1)
DCR(IROW,1)
ATF(IROW,1)
BTF(IROW,1)
CTF(IROW,1)
DTF(IROW,1)
ATR(IROW,1)
BTR(IROW,1)
CTR(IROW,1)
DTR(IROW,1)
ELE(IROW,1)
ETE(IROW,1)
ACF(IROW,2)
BCR(IROW,2)
CCF(IROW,2)
DCF(IROW,2)
ACR(IROW,2)
BCR(IROW,2)
CCR(IROW,2)
DCR(IROW,2)
ATF(IROW,2)
BTF(IROW,2)
CTF(IROW,2)
DTF(IROW,2)
ATF(IROW,2)
BTR(IROW,2)
CTR(IROW,2)
DTR(IROW,2)
ELE(IROW,2)
ETE(IROW,2)
ACF(IROW,NEL)
BCF(IROW,NEL)
CCF(IROW,NEL)
DCF(IROW,NEL)
ACR(IROW,NEL)
BCR(IROW,NEL)
CCR(IROW,NEL)
DCR(IROW,NEL)
ATF(IROW,NEL)
BTF(IROW,NEL)
CTF(IROW,NEL)
DTF(IROW,NEL)
ATR(IROW,NEL)
BTR(IROW,NEL)
CTR(IROW,NEL)
DTR(IROW,NEL)
ELE(IROW,NEL)
ETE(IROW,NEL)

Parameter	Description	Format
AA	Type of calculating station or blade row (ANNULAR, ROTOR or STATOR). The default is ANNULAR.	A4
ACF(J)	The linear coefficient for the blade element centerline angle equation for the front segment, $\kappa = \kappa_t + \text{ACF} \times \text{S} + \text{BCF} \times \text{S}^2 + \text{CCF} \times \text{S}^3 + \text{DCF} \times \text{S}^4$ (Note: See IGEO for the definition of S)	F10.4
ACR(J)	The linear coefficient for the blade element centerline angle equation for the rear segment, $\kappa = \kappa_t + \text{ACR} \times \text{S} + \text{BCR} \times \text{S}^2 + \text{CCR} \times \text{S}^3 + \text{DCR} \times \text{S}^4$	F10.4
ADAMP	Slope angle of the damper centerline in the meridional view (deg.)	F10.4
ALP(J)	Slope angle of the blade element in the meridional view (deg.)	F10.4
ATF(J)	The first coefficient of the blade element thickness equation forward of the maximum thickness point, $\frac{t}{2c} = \frac{t_m}{2c} - \text{ATF}\left(\sqrt{S_o - S} - \sqrt{S_o} + \frac{S}{2\sqrt{S_o}}\right) - \text{BTF} \times \text{S}^2 - \text{CTF} \times \text{S}^3 - \text{DTF} \times \text{S}^4$	F10.4
ATR(J)	The first coefficient of the blade element thickness equation rearward of the maximum thickness point, $\frac{t}{2c} = \frac{t_m}{2c} - \text{ATR}\left(\sqrt{S_o - S} - \sqrt{S_o} + \frac{S}{2\sqrt{S_o}}\right) - \text{BTR} \times \text{S}^2 - \text{CTR} \times \text{S}^3 - \text{DTR} \times \text{S}^4$	F10.4
BCF(J)	The quadratic coefficient for the blade element centerline angle equation for the front segment, $\kappa = \kappa_t + \text{ACF} \times \text{S} + \text{BCF} \times \text{S}^2 + \text{CCF} \times \text{S}^3 + \text{DCF} \times \text{S}^4$	F10.4

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
BCR(J)	The quadratic coefficient for the blade element centerline angle equation for the rear segment, $\kappa = \kappa_t + \text{ACR} \times \text{S} + \text{BCR} \times \text{S}^2 + \text{CCR} \times \text{S}^3 + \text{DCR} \times \text{S}^4$	F10.4
BH(I)	Boundary layer displacement from the hub (in.).	F10.4
BLADES	The number of blades in each rotor or stator blade row.	F10.4
BT(I)	Boundary layer displacement from the casing (in.).	F10.4
BTF(J)	Quadratic coefficient of the blade element thickness equation forward of the maximum thickness point, $\frac{t}{2c} = \frac{t_m}{2c} - \text{ATF}\left(\sqrt{S_o - S} - \sqrt{S_o} + \frac{S}{2\sqrt{S_o}}\right) - \text{BTF} \times \text{S}^2 - \text{CTF} \times \text{S}^3 - \text{DTF} \times \text{S}^4$	F10.4
BTR(J)	Quadratic coefficient of the blade element thickness equation rearward of the maximum thickness point, $\frac{t}{2c} = \frac{t_m}{2c} - \text{ATR}\left(\sqrt{S_o - S} - \sqrt{S_o} + \frac{S}{2\sqrt{S_o}}\right) - \text{BTR} \times \text{S}^2 - \text{CTR} \times \text{S}^3 - \text{DTR} \times \text{S}^4$	F10.4
CCF(J)	The cubic coefficient for the blade element centerline angle equation for the front segment, $\kappa = \kappa_t + \text{ACF} \times \text{S} + \text{BCF} \times \text{S}^2 + \text{CCF} \times \text{S}^3 + \text{DCF} \times \text{S}^4$	F10.4
CCR(J)	The cubic coefficient for the blade element centerline angle equation for the rear segment, $\kappa = \kappa_t + \text{ACR} \times \text{S} + \text{BCR} \times \text{S}^2 + \text{CCR} \times \text{S}^3 + \text{DCR} \times \text{S}^4$	F10.4
CHORD(J)	Chord length of a blade element (in.).	F10.4

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
CDAMP	Chord length of a mid-span shroud in the meridional plane (in.).	F10.4
CPCO(I2) For I2 = 1,6	Constants for the specific heat polynomial function of temperature, $C_p = CPCO(1) + CPCO(2) \times T + CPCO(3) \times T^2 +$ $CPCO(4) \times T^3 + CPCO(5) \times T^4 + CPCO(6) \times T^5$	E20.8
CRENGY	An estimate of the cumulative energy addition fraction through a particular rotor to the total energy addition of the compressor. Thus, the fractions are progressively larger positive numbers through successive rotors. For the last rotor, CRENGY should be 1.0.	F10.4
CTF(J)	The cubic coefficient of the blade element thickness equation forward of the maximum thickness point, $\frac{t}{2c} = \frac{t_m}{2c} - \text{ATF}\left(\sqrt{S_o - S} - \sqrt{S_o} + \frac{S}{2\sqrt{S_o}}\right) - \text{BTF} \times \text{S}^2 - \text{CTF} \times \text{S}^3 - \text{DTF} \times \text{S}^4$	F10.4
CTR(J)	The cubic coefficient of the blade element thickness equation rearward of the maximum thickness point, $\frac{t}{2c} = \frac{t_m}{2c} - \text{ATR}\left(\sqrt{S_o - S} - \sqrt{S_o} + \frac{S}{2\sqrt{S_o}}\right) - \text{BTR} \times \text{S}^2 - \text{CTR} \times \text{S}^3 - \text{DTR} \times \text{S}^4$	F10.4
DCF(J)	The quartic coefficient for the blade element centerline angle equation for the front segment, $\kappa = \kappa_t + \text{ACF} \times \text{S} + \text{BCF} \times \text{S}^2 + \text{CCF} \times \text{S}^3 + \text{DCF} \times \text{S}^4$	F10.4
DCR(J)	The quartic coefficient for the blade element centerline angle equation for the rear segment, $\kappa = \kappa_t + \text{ACR} \times \text{S} + \text{BCR} \times \text{S}^2 + \text{CCR} \times \text{S}^3 + \text{DCR} \times \text{S}^4$	F10.4

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
DFTAB(K,J,I)	The blade element diffusion factor (D-factor from which profile losses are tabulated. Five values are input for each streamline; that is, K always has from 1 to 5, J is the streamline index, and I is the loss set index. The maximum number of loss sets is 9. Since D-factor values normally fall between 0.3 and 0.7, values of 0.3, 0.4, 0.5, 0.6, and 0.7 for DFTAB on a streamline can be implied by leaving the DFTAB values blank. Note that you cannot set DFTAB(1,K,I) to exactly 0.0 when you do not intend to use the implied values of DFTAB.	F8.4
DLOS(K,J,I)	Profile loss parameter $\overline{\omega}_p \cos\frac{\beta'_2}{2\sigma}$, associated with the DFTAB reference arrays.	F8.4
DTF(J)	The quartic coefficient of the blade element thickness equation forward of the maximum thickness point, $\frac{t}{2c} = \frac{t_m}{2c} - \text{ATF}\left(\sqrt{S_o - S} - \sqrt{S_o} + \frac{S}{2\sqrt{S_o}}\right) - \text{BTF} \times \text{S}^2 - \text{CTF} \times \text{S}^3 - \text{DTF} \times \text{S}^4$	F10.4
DTR(J)	The quartic coefficient of the blade element thickness equation rearward of the maximum thickness point, $\frac{t}{2c} = \frac{t_m}{2c} - \text{ATR}\left(\sqrt{S_o - S} - \sqrt{S_o} + \frac{S}{2\sqrt{S_o}}\right) - \text{BTR} \times \text{S}^2 - \text{CTR} \times \text{S}^3 - \text{DTR} \times \text{S}^4$	F10.4
EFF	The estimated stage adiabatic efficiency for the first iteration.	F10.4
ELE(J)	Coefficients for the leading edge ellipse ratio of semimajor to semiminor axes minus 1.0, $e = \frac{b}{a} - 1.0 = \text{ELE}$	F10.4
ETE(J)	Coefficients for the trailing edge ellipse ratio of semimajor to semiminor axes minus 1.0, $e = \frac{b}{a} - 1.0 = \text{ETE}$	F10.4

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
FLOFRA(J)	The cumulative weight-flow split between streamlines starting from the tip. NTUBES, which is NSTRM - 1, values are read. Thus, the first value is greater than zero; and succeeding values must increase to 1.0 to make the accumulation target a given overall flow rate.	F10.4
FLOW	The initial reference flow rate (lb/sec).	F10.4
BLEED(I)	Bleed flow as fraction of flow at calculating stations; i.e., a simulation casing bleed to get a high pressure ratio compressor through the part speed area mismatch.	F8.4
I	Calculation station index. (Maximum of 100).	I3
J	Streamline index. (Maximum of 11).	I2
IDAMP	Option parameter for a part span shroud. If IDAMP > 0, a read of damper geometry information on the next line is activated.	I5
IGEO	A blade definition index. When IGEO is 0, the blade segment centerline and surfaces are defined by $d\kappa/dS$ = Constant. When IGEO is not 0, the segment centerline and surfaces are defined with 4th degree functions of path distance(s) from the transition point and maximum thickness points respectively. The specification of the coefficients for these functions is extra input. If IGEO is positive, the coefficients for the definition polynomials are interpreted to be functions of segment length normalized to 1.0; but if IGEO is negative, the coefficients are interpreted to be functions of segment length normalized by chord.	I5

Parameter	Description	Format

The reference point for the centerline polynomials can be either the transition point or the segment ends. The IGEO options are given by the following table:

Table of the IGEO Options

IGEO	Centerline		Thickness		Centerline		Thickness	
	S_1	S_2	$S_{m,1}$	$S_{m,2}$	S_1	S_2	$S_{m,1}$	$S_{m,2}$
	Origin				Range (all positive S)			
-4	Leading edge	Trailing edge	Maximum thickness	Maximum thickness	0 to $\frac{S_1}{c}$	0 to $\frac{S_2}{c}$	0 to $\frac{S_{m,1}}{c}$	0 to $\frac{S_{m,2}}{c}$
-3	Transition point	Trailing edge						
-2	Leading edge	Transition point						
-1 or < -4	Transition point	Transition point						
1 or > 4	Transition point	Transition point	Maximum thickness	Maximum thickness	0 to 1.0	0 to 1.0	0 to 1.0	0 to 1.0
2	Leading edge	Transition point						
3	Transition point	Trailing edge						
4	Leading edge	Trailing edge						

ILOSS Indicator designation of which profile loss set [I variable in DLOS(K,J,I)] to use with a particular blade row. I5

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
IROTOR	Rotor index.	
IROW	Blade row index.	
ITER	Iteration counter.	
ISTN(I)	Integer designation of calculating station type: 1 - Rotor inlet 2 - Rotor outlet -1 - Stator inlet -2 - Stator outlet 0 - ANNULAR	
KIC(J)	Local blade element inlet angle at the centerline (deg.).	F10.4
KOC(J)	Local blade element outlet angle at the centerline (deg.).	F10.4
MOLE	Molecular weight of the gas (28.97 for dry air).	F10.4
NA	Number of annular stations at which radial velocity profiles are constructed during computation.	I5
NEL	Number of blade definition elements in a blade row, usually 11.	I5
NHUB	Number of input points to describe the hub geometric boundary (Maximum of 100).	I5
NLOSS	Number of loss sets (Maximum of 9).	I5

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
NBROWS	Number of blade rows (Maximum of 40).	I5
NSTRM	Number of streamlines (Maximum of 11).	I5
NSPD	Number of speed lines (Maximum of 10).	I5
NTIP	Number of input points to describe the casing geometric boundary (Maximum of 100).	I5
P(J)	Ratio of inlet segment turning rate to outlet turning rate, $[(\frac{d\kappa}{dS})_I]/[(\frac{d\kappa}{dS})_o]$ at the transition point of a blade element.	F10.4
PO(I,J)	General stagnation pressure array, which is in Lb/ft^2 units internal to the program. I is the calculation station index; and J is the streamline index. Only [PO(1,J), J = 1, NSTRM] values are input; i.e., the streamline values for the 1st calculating station. The input values are in lb/in^2	F10.4
PR	The desired overall compressor pressure ratio.	F10.4
RANGE-CHOKE	The normalized calculation curve distance from the design point to the near choke point for each calculated speed line (a value of 0.1 to 0.2 is typical).	F10.4
RANGE-STALL	The normalized calculation curve distance from the design point to the near stall point for each calculated speed line (a value of 0.1 to 0.2 is typical).	F10.4
RDAMP	Radial location of the leading edge of a part-span shroud (in.).	F10.4
RDLE	Leading edge to chord ratio of a part-span shroud.	F10.4
RDTE	Trailing edge to chord ratio of a part-span shroud.	F10.4

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
RESET-IGV(IP)	Guide vane reset for each speed (deg.).	
RESET-STA1(IP)	Stator 1 reset for each speed (deg.).	
RESET-STA2(IP)	Stator 2 reset for each speed (deg.).	
RESET-STA3(IP)	Stator 3 reset for each speed (deg.).	
RESET-STA4(IP)	Stator 4 reset for each speed (deg.).	
RHUB(I)	Radial coordinates (in.) of the set of points used to define the hub geometric boundary (Maximum of 100).	F10.4
ROT	The compressor rotational speed (rpm).	F10.4
RSP(J)	Radial location of blade element intersection with the blade stacking line (in.).	F10.4
RTIP(I)	Radial coordinates (in.) of the set of points used to define the casing geometric boundary (Maximum of 100).	F10.4
SPEED(IP)	Speed line values to be investigated (values are relative to the input rotational speed; i.e., 1.1, 1.0, 0.9, 0.8). (Maximum of 10).	F10.4
STEP-CHOKE	The step increment along the normalized curve distance for the choke side of each calculated speed line. The STEP value is usually about 25% of the RANGE value.	F10.4
STEP-STALL	The step increment along the normalized curve distance for the stall side of each calculated speed line. The STEP value is usually about 25% of the RANGE value.	F10.4

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
T(J)	Transition point location between the two segments of a blade element as a fraction of chord.	F10.4
TDAMP	Maximum thickness to chord ratio of the damper.	F10.4
THLE(J)	Leading edge radius to chord ratio of a blade element.	F10.4
THMAX(J)	A blade element maximum thickness to chord ratio	F10.4
THTE(J)	Trailing edge radius to chord ratio of a blade element.	F10.4
TTILT	Angle of the stacking axis tilt (deg.) in the circumferential direction ($r - \theta$ plane). The angle is positive in the direction of rotor rotation.	F10.4
TITLE(I)	Description of the compressor for printout.	18A4
TO(I,J)	General stagnation temperature array, which is in Deg. R units internal to the program. I is the calculation station index; and J is the streamline index. Only [TO(1,J), J = 1, NSTRM] values are input, i.e., the streamline values for the 1st calculating station. The input values Deg. R units.	F10.4
TS(J)	Blade element leading edge circle center angular location (θ) relative to blade stacking line (Deg.). The angle is positive in the direction of rotation.	F10.4
VTH(I,J)	General tangential component of velocity array in the program. Only the [VTH(1,J), J = 1, NSTRM] values are input; i.e., the streamline values for the 1st calculating station. The input values are in ft/sec.	F10.4

DESCRIPTION OF THE INPUT PARAMETERS (con't)

Parameter	Description	Format
XHUB(I)	Axial coordinates of the set of points used to define the hub geometric boundary (in.). The data range must at least reach from the furthest upstream annular calculating station to the furthest downstream calculating station. The maximum number of points is 100; and the minimum is 4.	F10.4
XTIP(I)	Axial coordinates of the set of points used to define the casing geometric boundary (in.). The conditions and limitations are the same as those on XHUB.	F10.4
ZHUB(INAB)	The hub axial coordinate (in.). When the data set is a blade rather than an ANNULAR station, ZHUB(INAB) is the axial location of the axial location of the blade stacking line at the hub.	F10.4
ZM(J)	Location of the maximum thickness point as a fraction of blade element chord.	F10.4
ZS(J)	Blade element leading edge circle center axial location relative to that of the blade element intersection with the blade stacking line (in.).	F10.4
ZTIP(INAB)	The casing axial coordinate (in.). When the data set is a blade rather than an ANNU station, ZHUB(INAB) is the axial location of the blade stacking line at the hub.	F10.4

TABLE 1 - EXAMPLE INPUT DATA SET(no stator resets)

```
low aspect ratio two stage nasa fan-- same as used in design report-offdes
    2      .20000     .02900   0.05000  0.02000
  1.0000   0.9000
  0.0000   0.0000
  0.0000   0.0000
  0.0000   0.0000
  0.0000   0.0000
  0.0000   0.0000
   11     4   17     2    25    33  16042.80  73.30000   2.40000  28.96175
        .23762070e+00      '   .39556990e-04       -.28462990e-06
        .81650840e-09        -.81993710e-12        .28442580e-15
     .10000     .20000     .30000     .40000     .50000     .60000     .70000     .80000
     .90000    1.00000
   518.700    518.700    518.700    518.700    518.700    518.700    518.700    518.700
   518.700    518.700    518.700
    14.125     14.670     14.700     14.700     14.700     14.700     14.700     14.700
    14.700     14.700     14.660
     .00000     .00000     .00000     .00000     .00000     .00000     .00000     .00000
     .00000     .00000     .00000
 -14.00000   -7.00000   -3.00000   -1.10000    -.20000     .52700    1.10000    2.70000
   4.00000    5.61000    7.20000    7.80000    8.40000    9.15000    9.90000   10.60000
  11.60000   13.00000   15.30000   16.45900   17.00000   18.00000   18.68300   20.00000
  22.00000
  10.10000   10.10000   10.10000   10.10000   10.08000    9.98000    9.87000    9.65080
   9.60000    9.60000    9.60000    9.60000    9.54000    9.44000    9.36000    9.32800
   9.30000    9.30000    9.30000    9.30000    9.31900    9.45300    9.62300   10.14900
  11.60500
 -14.00000  -13.10000  -12.20000  -11.30000   -9.90000   -7.80000   -5.70000   -4.80000
  -3.59000   -2.00000   -1.25000     .00000    1.00000    2.50000    3.70000    5.30000
   6.10000    6.90000    7.60000    8.70000    9.30000    9.90000   10.70000   11.30000
  12.50000   13.70000   14.90000   16.00000   17.00000   18.00000   18.68300   20.00000
  22.00000
   3.75000    3.75000    3.75000    3.72500    3.67500    3.60000    3.52500    3.50000
   3.52000    3.58000    3.69000    4.00000    4.32000    4.63000    4.80000    4.94000
   5.02000    5.09000    5.16000    5.33000    5.45000    5.60000    5.72000    5.80000
   5.86000    5.92000    5.96000    6.00000    6.08000    6.25300    6.43000    6.91700
   8.09300
   .0139   .0166   .0203   .0260   .0338   .3000   .4000   .5000   .6000   .7000
   .0112   .0130   .0160   .0202   .0263   .3000   .4000   .5000   .6000   .7000
   .0100   .0113   .0132   .0163   .0210   .3000   .4000   .5000   .6000   .7000
   .0080   .0089   .0103   .0130   .0165   .3000   .4000   .5000   .6000   .7000
   .0080   .0089   .0103   .0130   .0165   .3000   .4000   .5000   .6000   .7000
   .0080   .0089   .0103   .0130   .0165   .3000   .4000   .5000   .6000   .7000
   .0080   .0089   .0103   .0130   .0165   .3000   .4000   .5000   .6000   .7000
   .0080   .0089   .0103   .0130   .0165   .3000   .4000   .5000   .6000   .7000
   .0090   .0103   .0122   .0153   .0200   .3000   .4000   .5000   .6000   .7000
   .0092   .0110   .0140   .0182   .0243   .3000   .4000   .5000   .6000   .7000
   .0104   .0127   .0168   .0221   .0296   .3000   .4000   .5000   .6000   .7000
   .0309   .0336   .0373   .0430   .0508   .3000   .4000   .5000   .6000   .7000
   .0272   .0290   .0320   .0362   .0423   .3000   .4000   .5000   .6000   .7000
   .0250   .0263   .0282   .0313   .0360   .3000   .4000   .5000   .6000   .7000
   .0230   .0239   .0253   .0280   .0310   .3000   .4000   .5000   .6000   .7000
   .0211   .0220   .0234   .0261   .0296   .3000   .4000   .5000   .6000   .7000
   .0212   .0222   .0236   .0264   .0299   .3000   .4000   .5000   .6000   .7000
   .0214   .0226   .0241   .0269   .0306   .3000   .4000   .5000   .6000   .7000
   .0218   .0231   .0248   .0278   .0317   .3000   .4000   .5000   .6000   .7000
   .0233   .0248   .0270   .0303   .0347   .3000   .4000   .5000   .6000   .7000
   .0272   .0290   .0320   .0362   .0423   .3000   .4000   .5000   .6000   .7000
   .0294   .0317   .0358   .0441   .0486   .3000   .4000   .5000   .6000   .7000
annular   -11.00000 -11.00000    .00000    .00000   0.0000
annular    -9.00000  -9.00000    .00439    .01217   0.0000
annular    -7.00000  -7.00000    .00884    .02492   0.0000
annular    -5.20000  -5.20000    .01333    .03817   0.0000
annular    -3.70000  -3.70000    .02221    .06316   0.0000
annular    -2.30000  -2.60000    .02889    .08182   0.0000
```

TABLE 1 - EXAMPLE INPUT DATA SET(no stator resets)

```
annular      -1.00000  -1.50000    .03540    .09903   0.0000
rotor          .94100    .94100    .04571    .12259   0.0000
 11  1  1  0  0.000    22.0        .0524     .1026    0.0000     .8569     .5000
   .001800   .001801   .029008   .640000   .700000   .075000
 67.263710 53.819990 3.664327-10.148210 9.855471  .742835-10.112840
   .001854   .001868   .029998   .630000   .647400   .180000
 63.414730 52.954860 3.670819 -7.508253 9.419851  .877825-10.289330
   .001984   .002026   .032414   .620000   .604200   .430000
 61.345810 52.732890 3.668617 -5.697886 8.993848  .943206-10.565180
   .002187   .002267   .036168   .610000   .562700   .660000
 59.472620 50.578800 3.666607 -3.908523 8.553914 1.004472-10.879460
   .002459   .002582   .041154   .600000   .519300   .790000
 57.361910 47.352410 3.665117 -2.152351 8.094000 1.077046-11.211970
   .002793   .002957   .047256   .580000   .470500   .830000
 55.066130 42.201420 3.664356  -.383670 7.608888 1.158294-11.490080
   .003185   .003377   .054318   .560000   .418000   .860000
 52.454880 36.314500 3.664808 1.442794 7.090268 1.250203-11.752500
   .003623   .003818   .062085   .540000   .359200   .960000
 49.456170 27.960340 3.667629 3.459608 6.528422 1.362129-11.896410
   .004085   .004243   .070067   .500000   .286200   .980000
 45.821740 17.331430 3.675878 5.871156 5.906867 1.483685-11.707410
   .004525   .004602   .077171   .500000   .224300 1.000000
 41.865530  2.559158 3.697754 8.993676 5.197867 1.644855-11.116670
   .004797   .004796   .080222   .500000   .162900 1.000000
 36.960720-16.395800 3.761671 13.852820 4.331938 1.802996 -9.081044
   .350682   .691483   .000000  -.691483  -.696423   .000000  -.691483   .000000
   .000000   .027085   .000000   .000000   .000076   .000000   .271992   .000000
   .992906   .000000
   .348614   .594778   .000000  -.594778  -.646003   .000000  -.594778   .000000
   .000000   .029343   .000000   .000000   .000852   .000000   .256331   .000000
   .920705   .000000
   .348777   .514857   .000000  -.514857  -.606206   .000000  -.514857   .000000
   .000000   .033250   .000000   .000000   .001702   .000000   .252549   .000000
   .849311   .000000
   .345669   .437443   .000000  -.437443  -.564391   .000000  -.437443   .000000
   .000000   .038936   .000000   .000000   .002757   .000000   .256919   .000000
   .775071   .000000
   .338194   .361985   .000000  -.361985  -.519186   .000000  -.361985   .000000
   .000000   .046518   .000000   .000000   .004110   .000000   .266956   .000000
   .697216   .000000
   .325372   .288689   .000000  -.288689  -.469716   .000000  -.288689   .000000
   .000000   .058034   .000000   .000000   .005776   .000000   .260320   .000000
   .614603   .000000
   .307296   .219088   .000000  -.219088  -.416840   .000000  -.219088   .000000
   .000000   .072581   .000000   .000000   .007863   .000000   .255666   .000000
   .525593   .000000
   .282069   .153511   .000000  -.153511  -.358824   .000000  -.153511   .000000
   .000000   .090267   .000000   .000000   .010427   .000000   .250194   .000000
   .427815   .000000
   .247833   .093499   .000000  -.093499  -.294583   .000000  -.093499   .000000
   .000000   .119800   .000000   .000000   .013199   .000000   .213884   .000000
   .317394   .000000
   .206065   .042507   .000000  -.042507  -.227319   .000000  -.042507   .000000
   .000000   .131741   .000000   .000000   .016899   .000000   .225236   .000000
   .186993   .000000
   .151836   .002953   .000000  -.002953  -.153313   .000000  -.002953   .000000
   .000000   .134921   .000000   .000000   .020384   .000000   .215452   .000000
   .019264   .000000
annular      3.00000   3.30000    .05534    .10998   0.0000
stator       5.20000   5.20000    .06098    .11928   0.0000
 11  2  1  0  0.000    34.0        .0697     .1309    0.0000
   .012897   .012878   .079743   .500000   .400000 1.000000
 36.693180-16.091950 2.270252  -.289535 9.532545 1.053663  2.319497
   .012291   .012281   .078228   .500000   .400000 1.000000
 33.496100-12.257040 2.270269   .237212 9.182470 1.057440  2.291867
```

TABLE 1 - EXAMPLE INPUT DATA SET(no stator resets)

```
   .011681   .011666   .076701   .500000   .400000  1.000000
 33.488160-10.482750  2.270352   .566814  8.825970  1.054125  2.455457
   .011047   .011029   .075118   .500000   .400000  1.000000
 33.898910 -9.693403  2.270517   .924599  8.456358  1.051422  2.635809
   .010385   .010367   .073463   .500000   .400000  1.000000
 34.603690 -9.097510  2.270816  1.349323  8.071085  1.047920  2.858991
   .009687   .009675   .071719   .500000   .400000  1.000000
 35.844540 -8.800952  2.271337  1.878423  7.666330  1.042652  3.153324
   .008944   .008943   .069861   .500000   .400000  1.000000
 37.274850 -8.604356  2.272220  2.539784  7.236899  1.036445  3.509247
   .008146   .008162   .067864   .500000   .400000  1.000000
 38.927800 -8.807656  2.273599  3.328634  6.776628  1.029862  3.937878
   .007277   .007317   .065693   .500000   .400000  1.000000
 40.825370 -9.008737  2.275653  4.252992  6.276914  1.021594  4.491714
   .006312   .006374   .063281   .500000   .400000  1.000000
 43.448150-10.287890  2.278276  5.229607  5.720603  1.012673  5.234231
   .005201   .005230   .060502   .500000   .400000  1.000000
 46.876120-14.152360  2.278774  5.458222  5.063943  1.008646  6.219320
   .334333   .000000   .000000   .000000  -.334333   .000000   .000000   .000000
   .000000   .105577   .000000   .000000   .000000   .105650   .000000   .000000
   .000000   .000000
   .309119   .000000   .000000   .000000  -.309119   .000000   .000000   .000000
   .000000   .106627   .000000   .000000   .000000   .106658   .000000   .000000
   .000000   .000000
   .302450   .000000   .000000   .000000  -.302450   .000000   .000000   .000000
   .000000   .106211   .000000   .000000   .000000   .106252   .000000   .000000
   .000000   .000000
   .296337   .000000   .000000   .000000  -.296337   .000000   .000000   .000000
   .000000   .105421   .000000   .000000   .000000   .105468   .000000   .000000
   .000000   .000000
   .290864   .000000   .000000   .000000  -.290864   .000000   .000000   .000000
   .000000   .104481   .000000   .000000   .000000   .104523   .000000   .000000
   .000000   .000000
   .286973   .000000   .000000   .000000  -.286973   .000000   .000000   .000000
   .000000   .103307   .000000   .000000   .000000   .103321   .000000   .000000
   .000000   .000000
   .282111   .000000   .000000   .000000  -.282111   .000000   .000000   .000000
   .000000   .102012   .000000   .000000   .000000   .101972   .000000   .000000
   .000000   .000000
   .275536   .000000   .000000   .000000  -.275536   .000000   .000000   .000000
   .000000   .100507   .000000   .000000   .000000   .100381   .000000   .000000
   .000000   .000000
   .267078   .000000   .000000   .000000  -.267078   .000000   .000000   .000000
   .000000   .098860   .000000   .000000   .000000   .098624   .000000   .000000
   .000000   .000000
   .256524   .000000   .000000   .000000  -.256524   .000000   .000000   .000000
   .000000   .096641   .000000   .000000   .000000   .096274   .000000   .000000
   .000000   .000000
   .240341   .000000   .000000   .000000  -.240341   .000000   .000000   .000000
   .000000   .093245   .000000   .000000   .000000   .092896   .000000   .000000
   .000000   .000000
annular      7.34000   7.34000    .06886    .12756  0.0000
rotor        9.20000   9.20000    .06634    .12314  0.0000
 11  1  0  0  0.000    38.0        .0608     .0995   0.0000    .8526    1.0000
   .006141   .006147   .034033   .500000   .662701   .610000
 62.045680 56.549140  2.025434 -6.611087  9.375244   .484734 -5.280378
   .006818   .006860   .035070   .500000   .635082   .663000
 61.064560 55.480270  2.027373 -5.160486  9.067986   .501454 -5.406044
   .007507   .007589   .037438   .500000   .605315   .767000
 59.944920 53.732040  2.026563 -3.787091  8.754455   .522647 -5.518399
   .008217   .008338   .041001   .500000   .573424   .886000
 58.659890 51.710970  2.025942 -2.438716  8.431924   .546953 -5.630420
   .008953   .009109   .045609   .500000   .539545   .981000
 57.239140 49.220690  2.025542 -1.075742  8.098637   .574187 -5.740963
   .009722   .009910   .051095   .500000   .503937  1.000000
```

TABLE 1 - EXAMPLE INPUT DATA SET(no stator resets)

```
 55.717650 46.031280  2.025443   .303339  7.751405   .604001 -5.849570
   .010534   .010749   .057261   .500000   .466535 1.000000
 54.154580 41.967840  2.025782  1.745823  7.386182   .636846 -5.951947
   .011403   .011631   .063831   .500000   .427253 1.000000
 52.589490 36.760390  2.026887  3.363187  6.998212   .673513 -6.043245
   .012349   .012564   .070378   .500000   .400000 1.000000
 51.127640 30.008670  2.029568  5.318213  6.581101   .714439 -6.121232
   .013414   .013573   .076219   .500000   .400000 1.000000
 50.351580 20.164020  2.035773  7.810988  6.119192   .760650 -6.179757
   .014740   .014763   .079887   .500000   .400000 1.000000
 52.661920  -.227603  2.051764 11.213100  5.558432   .833684 -6.192075
annular     11.01000  11.01000   .05768   .09283  0.0000
stator      12.70000  12.70000   .05645   .08902  0.0000
 11  2  0  0  0.000    42.0       .0556    .0866   0.0000
   .013869   .013869   .079673   .500000   .400000 1.000000
 35.156360-15.591150  1.752965   .218228  9.243720   .815766  1.758464
   .013226   .013227   .078066   .500000   .400000 1.000000
 34.570910-12.796350  1.753006   .412958  8.968904   .812966  1.857296
   .012573   .012572   .076432   .500000   .400000 1.000000
 34.650860-10.899650  1.753047   .584015  8.689082   .809901  1.981077
   .011903   .011900   .074758   .500000   .400000 1.000000
 34.761940 -9.900812  1.753097   .742997  8.402148   .808503  2.090629
   .011214   .011209   .073036   .500000   .400000 1.000000
 35.247040 -9.401468  1.753158   .900391  8.106925   .806894  2.221860
   .010500   .010493   .071251   .500000   .400000 1.000000
 36.187140 -9.202477  1.753240  1.076967  7.800988   .804274  2.390367
   .009754   .009746   .069385   .500000   .400000 1.000000
 37.385810 -9.103498  1.753351  1.279858  7.481543   .800841  2.594133
   .008970   .008961   .067425   .500000   .400000 1.000000
 38.802670 -9.304166  1.753489  1.496732  7.145767   .797099  2.830565
   .008140   .008129   .065350   .500000   .400000 1.000000
 40.461510 -9.603374  1.753636  1.703145  6.790201   .792491  3.117419
   .007245   .007229   .063113   .500000   .400000 1.000000
 43.768870-11.098900  1.753786  1.906015  6.406141   .783899  3.555653
   .006206   .006204   .060514   .500000   .400000 1.000000
 52.207230-15.989800  1.754217  2.433165  5.963572   .760492  4.456488
annular     14.44000  14.44000   .05518   .08551  0.0000
annular     15.70000  16.00000   .05486   .08391  0.0000
annular     17.00000  17.60000   .05383   .07992  0.0000
annular     17.75000  18.60000   .05288   .07654  0.0000
annular     18.50000  19.60000   .05214   .07300  0.0000
annular     19.25000  20.60000   .05113   .06867  0.0000
annular     20.00000  21.50000   .05004   .06492  0.0000
0000000000000000000000000000000000000000
```

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

1

*** input data for axial-flow compressor off-design performance prediction program ***

low aspect ratio two stage nasa fan-- same as used in design report-offd

stator reset

fraction design speed	reset guide vane angle	reset stator 1 angle	reset stator 2 angle	reset stator 3 angle	reset stator 4 angle
1.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.90000	0.00000	0.00000	0.00000	0.00000	0.00000

the comp. design rotational speed is 16042.8 rpm.
calcs. will be made on 11 streamlines.

the design inlet flow rate is 73.300 (lb/sec).
the compressor has 4 blade rows.

the compressor design pressure ratio is 2.400 .
the molecular weight is 28.96 .

the range to be covered to the choke side is 0.200 .
the choke point interval is 0.029 .

the range to be covered to the stall side is 0.050 .
the stall point interval is 0.020 .

calculations will be made at the blade edges and at 17 annular stations.

the fractions of design speed to be investigated are 1.000 0.900

the specific heat polynomial is in the following form

cp = 0.23762E+00 + 0.39557E-04*t + -0.28463E-06*t**2 + 0.81651E-09*t**3 + -0.81994E-12*t**4 + 0.28443E-15*t**5

input distributions by streamline or streamtube

streamline no.	inlet total temperature (deg. r.)	inlet total pressure (psia)	inlet whirl velocity (ft/sec)	streamtube no.	streamtube flow fraction
1	518.700	14.125	0.000	1	0.1000
2	518.700	14.670	0.000	2	0.2000
3	518.700	14.700	0.000	3	0.3000
4	518.700	14.700	0.000	4	0.4000
5	518.700	14.700	0.000	5	0.5000
6	518.700	14.700	0.000	6	0.6000
7	518.700	14.700	0.000	7	0.7000
8	518.700	14.700	0.000	8	0.8000
9	518.700	14.700	0.000	9	0.9000
10	518.700	14.700	0.000	10	1.0000

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

```
          11          518.700          14.660          0.000
1
```

input data points for tip and hub contours.

tip axial coordinate (inches)	tip radius (inches)	hub axial coordinate (inches)	hub radius (inches)
-14.000	10.100	-14.000	3.750
-7.000	10.100	-13.100	3.750
-3.000	10.100	-12.200	3.750
-1.100	10.100	-11.300	3.725
-0.200	10.080	-9.900	3.675
0.527	9.980	-7.800	3.600
1.100	9.870	-5.700	3.525
2.700	9.651	-4.800	3.500
4.000	9.600	-3.590	3.520
5.610	9.600	-2.000	3.580
7.200	9.600	-1.250	3.690
7.800	9.600	0.000	4.000
8.400	9.540	1.000	4.320
9.150	9.440	2.500	4.630
9.900	9.360	3.700	4.800
10.600	9.328	5.300	4.940
11.600	9.300	6.100	5.020
13.000	9.300	6.900	5.090
15.300	9.300	7.600	5.160
16.459	9.300	8.700	5.330
17.000	9.319	9.300	5.450
18.000	9.453	9.900	5.600
18.683	9.623	10.700	5.720
20.000	10.149	11.300	5.800
22.000	11.605	12.500	5.860
		13.700	5.920
		14.900	5.960
		16.000	6.000
		17.000	6.080
		18.000	6.253
		18.683	6.430
		20.000	6.917
		22.000	8.093

```
1                    the input reference profile loss tables --- omega(bar)*cos(beta)/(2.0*sigma)
```

** profile loss table no. 1 **

pct. pass.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.
0.00	0.3000	0.0139	0.4000	0.0166	0.5000	0.0203	0.6000	0.0260	0.7000	0.0338
10.00	0.3000	0.0112	0.4000	0.0130	0.5000	0.0160	0.6000	0.0202	0.7000	0.0263
20.00	0.3000	0.0100	0.4000	0.0113	0.5000	0.0132	0.6000	0.0163	0.7000	0.0210
30.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
40.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
50.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
60.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
70.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
80.00	0.3000	0.0090	0.4000	0.0103	0.5000	0.0122	0.6000	0.0153	0.7000	0.0200
90.00	0.3000	0.0092	0.4000	0.0110	0.5000	0.0140	0.6000	0.0182	0.7000	0.0243
100.00	0.3000	0.0104	0.4000	0.0127	0.5000	0.0168	0.6000	0.0221	0.7000	0.0296

** profile loss table no. 2 **

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

pct. pass.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.
0.00	0.3000	0.0309	0.4000	0.0336	0.5000	0.0373	0.6000	0.0430	0.7000	0.0508
10.00	0.3000	0.0272	0.4000	0.0290	0.5000	0.0320	0.6000	0.0362	0.7000	0.0423
20.00	0.3000	0.0250	0.4000	0.0263	0.5000	0.0282	0.6000	0.0313	0.7000	0.0360
30.00	0.3000	0.0230	0.4000	0.0239	0.5000	0.0253	0.6000	0.0280	0.7000	0.0310
40.00	0.3000	0.0211	0.4000	0.0220	0.5000	0.0234	0.6000	0.0261	0.7000	0.0296
50.00	0.3000	0.0212	0.4000	0.0222	0.5000	0.0236	0.6000	0.0264	0.7000	0.0299
60.00	0.3000	0.0214	0.4000	0.0226	0.5000	0.0241	0.6000	0.0269	0.7000	0.0306
70.00	0.3000	0.0218	0.4000	0.0231	0.5000	0.0248	0.6000	0.0278	0.7000	0.0317
80.00	0.3000	0.0233	0.4000	0.0248	0.5000	0.0270	0.6000	0.0303	0.7000	0.0347
90.00	0.3000	0.0272	0.4000	0.0290	0.5000	0.0320	0.6000	0.0362	0.7000	0.0423
100.00	0.3000	0.0294	0.4000	0.0317	0.5000	0.0358	0.6000	0.0441	0.7000	0.0486

1

*** input station data ***

** input set no. 1 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-11.0000	-11.0000	0.0000	0.0000

** input set no. 2 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-9.0000	-9.0000	0.0044	0.0122

** input set no. 3 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-7.0000	-7.0000	0.0088	0.0249

** input set no. 4 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-5.2000	-5.2000	0.0133	0.0382

** input set no. 5 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-3.7000	-3.7000	0.0222	0.0632

** input set no. 6 is an annular station **

tip axial location	hub axial location	tip b. layer thick.	hub b. layer thick.

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

(inches)	(inches)	(inches)	(inches)
-2.3000	-2.6000	0.0289	0.0818

1 *** input station data ***

** input set no. 7 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-1.0000	-1.5000	0.0354	0.0990

1 *** input station data ***

** input set no. 8 is rotor no. 1 **

tip c.g. axial location (inches)	hub c.g. axial location (inches)	inlet tip b. layer thick. (inches)	inlet hub b. layer thick. (inches)	blade dihedral angle (degrees)	range improvement bleed option
0.9410	0.9410	0.0457	0.1226	0.00	0.00000

number of blades	adia. eff. of cum. comp. stages at design	outlet tip b. layer thick. (inches)	outlet hub b. layer thick. (inches)	cum. energy addition fract. thru this stage
22	0.8569	0.0524	0.1026	0.5000

* table of input blade element definition parameters *

strm. no.	l.e.rad. /chord	t.e.rad. /chord	max.th. /chord	max.th. pt.loc. /chord	tran.pt. location /chord	segment in/out turn.rate	in.blade angle (deg)	out.blade angle (deg)	aero. chord (in.)	layout cone ang. (deg)	stack pt. radius (in.)	l.e.cir.cen.loc. from stack. line z (in.)	o (deg)
1	0.00180	0.00180	0.02901	0.64000	0.70000	0.07500	67.264	53.820	3.66433	-10.148	9.8555	0.74283	-10.113
2	0.00185	0.00187	0.03000	0.63000	0.64740	0.18000	63.415	52.955	3.67082	-7.508	9.4199	0.87783	-10.289
3	0.00198	0.00203	0.03241	0.62000	0.60420	0.43000	61.346	52.733	3.66862	-5.698	8.9938	0.94321	-10.565
4	0.00219	0.00227	0.03617	0.61000	0.56270	0.66000	59.473	50.579	3.66661	-3.909	8.5539	1.00447	-10.879
5	*0.00246*	*0.00258*	*0.04115*	*0.60000*	*0.51930*	*0.79000*	57.362	47.352	3.66512	-2.152	8.0940	1.07705	-11.212
6	0.00279	0.00296	0.04726	0.58000	0.47050	0.83000	55.066	42.201	3.66436	-0.384	7.6089	1.15829	-11.490
7	0.00319	0.00338	0.05432	0.56000	0.41800	0.86000	52.455	36.314	3.66481	1.443	7.0903	1.25020	-11.752
8	0.00362	0.00382	0.06208	0.54000	0.35920	0.96000	49.456	27.960	3.66763	3.460	6.5284	1.36213	-11.896
9	0.00409	0.00424	0.07007	0.50000	0.28620	0.98000	45.822	17.331	3.67588	5.871	5.9069	1.48369	-11.707
10	0.00453	0.00460	0.07717	0.50000	0.22430	1.00000	41.866	2.559	3.69775	8.994	5.1979	1.64486	-11.117
11	*0.00480*	*0.00480*	*0.08022*	*0.50000*	*0.16290*	*1.00000*	*36.961*	*-16.396*	*3.76167*	13.853	4.3319	1.80300	-9.081

1 * parameters for greater specification of blade element geometry *

strm. no.	poly. coef. for 1st seg. centerline angle (function of path dist. from trans. pt.) linear	quadratic	cubic	quartic	poly. coef. for 2nd seg. centerline angle (function of path dist. from trans. pt.) linear	quadratic	cubic	quartic
1	0.35068	0.69148	0.00000	-0.69148	-0.69642	0.00000	-0.69148	0.00000
2	0.34861	0.59478	0.00000	-0.59478	-0.64600	0.00000	-0.59478	0.00000
3	0.34878	0.51486	0.00000	-0.51486	-0.60621	0.00000	-0.51486	0.00000

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

4	0.34567	0.43744	0.00000	-0.43744	-0.56439	0.00000	-0.43744	0.00000
5	0.33819	0.36198	0.00000	-0.36198	-0.51919	0.00000	-0.36198	0.00000
6	0.32537	0.28869	0.00000	-0.28869	-0.46972	0.00000	-0.28869	0.00000
7	0.30730	0.21909	0.00000	-0.21909	-0.41684	0.00000	-0.21909	0.00000
8	0.28207	0.15351	0.00000	-0.15351	-0.35882	0.00000	-0.15351	0.00000
9	0.24783	0.09350	0.00000	-0.09350	-0.29458	0.00000	-0.09350	0.00000
10	0.20606	0.04251	0.00000	-0.04251	-0.22732	0.00000	-0.04251	0.00000
11	0.15184	0.00295	0.00000	-0.00295	-0.15331	0.00000	-0.00295	0.00000

strm. no.	poly. coef. for 1st segment thickness (function of path dist. from max.th. pt.)				poly. coef. for 2nd segment thickness (function of path dist. from max.th. pt.)				ellipse major/minor axis ratio minus 1.0	
	sq.root	quadratic	cubic	quartic	sq.root	quadratic	cubic	quartic	lead.edge	trail.edge
1	0.00000	0.02709	0.00000	0.00000	0.00008	0.00000	0.27199	0.00000	0.99291	0.00000
2	0.00000	0.02934	0.00000	0.00000	0.00085	0.00000	0.25633	0.00000	0.92071	0.00000
3	0.00000	0.03325	0.00000	0.00000	0.00170	0.00000	0.25255	0.00000	0.84931	0.00000
4	0.00000	0.03894	0.00000	0.00000	0.00276	0.00000	0.25692	0.00000	0.77507	0.00000
5	0.00000	0.04652	0.00000	0.00000	0.00411	0.00000	0.26696	0.00000	0.69722	0.00000
6	0.00000	0.05803	0.00000	0.00000	0.00578	0.00000	0.26032	0.00000	0.61460	0.00000
7	0.00000	0.07258	0.00000	0.00000	0.00786	0.00000	0.25567	0.00000	0.52559	0.00000
8	0.00000	0.09027	0.00000	0.00000	0.01043	0.00000	0.25019	0.00000	0.42781	0.00000
9	0.00000	0.11980	0.00000	0.00000	0.01320	0.00000	0.21388	0.00000	0.31739	0.00000
10	0.00000	0.13174	0.00000	0.00000	0.01690	0.00000	0.22524	0.00000	0.18699	0.00000
11	0.00000	0.13492	0.00000	0.00000	0.02038	0.00000	0.21545	0.00000	0.01926	0.00000

1 *** input station data ***

** input set no. 9 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
3.0000	3.3000	0.0553	0.1100

1 *** input station data ***

** input set no. 10 is a guide vane or stator **

tip c.g. axial location (inches)	hub c.g. axial location (inches)	inlet tip b. layer thick. (inches)	inlet hub b. layer thick. (inches)	blade dihedral angle (degrees)	range improvement bleed option
5.2000	5.2000	0.0610	0.1193	0.00	0.00000

+

number of blades	blade rotation option for stall margin	outlet tip b. layer thick. (inches)	outlet hub b. layer thick. (inches)
34		0.0697	0.1309

* table of input blade element definition parameters *

strm. no.	l.e.rad. /chord	t.e.rad. /chord	max.th. /chord	max.th. pt.loc. /chord	tran.pt. location /chord	segment in/out turn.rate	in.blade angle (deg)	out.blade angle (deg)	aero. chord (in.)	layout cone ang. (deg)	stack pt. radius (in.)	l.e.cir.cen.loc. from stack. line z (in.)	o (deg)

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

1	0.01290	0.01288	0.07974	0.50000	0.40000	1.00000	36.693	-16.092	2.27025	-0.290	9.5325	1.05366	2.319
2	0.01229	0.01228	0.07823	0.50000	0.40000	1.00000	33.496	-12.257	2.27027	0.237	9.1825	1.05744	2.292
3	0.01168	0.01167	0.07670	0.50000	0.40000	1.00000	33.488	-10.483	2.27035	0.567	8.8260	1.05412	2.455
4	0.01105	0.01103	0.07512	0.50000	0.40000	1.00000	33.899	-9.693	2.27052	0.925	8.4564	1.05142	2.636
5	0.01039	0.01037	0.07346	0.50000	0.40000	1.00000	34.604	-9.098	2.27082	1.349	8.0711	1.04792	2.859
6	0.00969	0.00967	0.07172	0.50000	0.40000	1.00000	35.845	-8.801	2.27134	1.878	7.6663	1.04265	3.153
7	0.00894	0.00894	0.06986	0.50000	0.40000	1.00000	37.275	-8.604	2.27222	2.540	7.2369	1.03645	3.509
8	0.00815	0.00816	0.06786	0.50000	0.40000	1.00000	38.928	-8.808	2.27360	3.329	6.7766	1.02986	3.938
9	0.00728	0.00732	0.06569	0.50000	0.40000	1.00000	40.825	-9.009	2.27565	4.253	6.2769	1.02159	4.492
10	0.00631	0.00637	0.06328	0.50000	0.40000	1.00000	43.448	-10.288	2.27828	5.230	5.7206	1.01267	5.234
11	0.00520	0.00523	0.06050	0.50000	0.40000	1.00000	46.876	-14.152	2.27877	5.458	5.0639	1.00865	6.219

1 * parameters for greater specification of blade element geometry *

strm. no.	poly. coef. for 1st seg. centerline angle (function of path dist. from trans. pt.) linear	quadratic	cubic	quartic	poly. coef. for 2nd seg. centerline angle (function of path dist. from trans. pt.) linear	quadratic	cubic	quartic
1	0.33433	0.00000	0.00000	0.00000	-0.33433	0.00000	0.00000	0.00000
2	0.30912	0.00000	0.00000	0.00000	-0.30912	0.00000	0.00000	0.00000
3	0.30245	0.00000	0.00000	0.00000	-0.30245	0.00000	0.00000	0.00000
4	0.29634	0.00000	0.00000	0.00000	-0.29634	0.00000	0.00000	0.00000
5	0.29086	0.00000	0.00000	0.00000	-0.29086	0.00000	0.00000	0.00000
6	0.28697	0.00000	0.00000	0.00000	-0.28697	0.00000	0.00000	0.00000
7	0.28211	0.00000	0.00000	0.00000	-0.28211	0.00000	0.00000	0.00000
8	0.27554	0.00000	0.00000	0.00000	-0.27554	0.00000	0.00000	0.00000
9	0.26708	0.00000	0.00000	0.00000	-0.26708	0.00000	0.00000	0.00000
10	0.25652	0.00000	0.00000	0.00000	-0.25652	0.00000	0.00000	0.00000
11	0.24034	0.00000	0.00000	0.00000	-0.24034	0.00000	0.00000	0.00000

strm. no.	poly. coef. for 1st segment thickness (function of path dist. from max.th. pt.) sq.root	quadratic	cubic	quartic	poly. coef. for 2nd segment thickness (function of path dist. from max.th. pt.) sq.root	quadratic	cubic	quartic	ellipse major/minor axis ratio minus 1.0 lead.edge	trail.edge
1	0.00000	0.10558	0.00000	0.00000	0.00000	0.10565	0.00000	0.00000	0.00000	0.00000
2	0.00000	0.10663	0.00000	0.00000	0.00000	0.10666	0.00000	0.00000	0.00000	0.00000
3	0.00000	0.10621	0.00000	0.00000	0.00000	0.10625	0.00000	0.00000	0.00000	0.00000
4	0.00000	0.10542	0.00000	0.00000	0.00000	0.10547	0.00000	0.00000	0.00000	0.00000
5	0.00000	0.10448	0.00000	0.00000	0.00000	0.10452	0.00000	0.00000	0.00000	0.00000
6	0.00000	0.10331	0.00000	0.00000	0.00000	0.10332	0.00000	0.00000	0.00000	0.00000
7	0.00000	0.10201	0.00000	0.00000	0.00000	0.10197	0.00000	0.00000	0.00000	0.00000
8	0.00000	0.10051	0.00000	0.00000	0.00000	0.10038	0.00000	0.00000	0.00000	0.00000
9	0.00000	0.09886	0.00000	0.00000	0.00000	0.09862	0.00000	0.00000	0.00000	0.00000
10	0.00000	0.09664	0.00000	0.00000	0.00000	0.09627	0.00000	0.00000	0.00000	0.00000
11	0.00000	0.09324	0.00000	0.00000	0.00000	0.09290	0.00000	0.00000	0.00000	0.00000

1 *** input station data ***

** input set no. 11 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
7.3400	7.3400	0.0689	0.1276

1 *** input station data ***

** input set no. 12 is rotor no. 2 **

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

tip c.g. axial location (inches)	hub c.g. axial location (inches)	inlet tip b. layer thick. (inches)	inlet hub b. layer thick. (inches)	blade dihedral angle (degrees)	range improvement bleed option
9.2000	9.2000	0.0663	0.1231	0.00	0.00000

number of blades	adia. eff. of cum. comp. stages at design	outlet tip b. layer thick. (inches)	outlet hub b. layer thick. (inches)	cum. energy addition fract. thru this stage
38	0.8526	0.0608	0.0995	1.0000

* table of input blade element definition parameters *

strm. no.	l.e.rad. /chord	t.e.rad. /chord	max.th. /chord	max.th. pt.loc. /chord	tran.pt. location /chord	segment in/out turn.rate	in.blade angle (deg)	out.blade angle (deg)	aero. chord (in.)	layout cone ang. (deg)	stack pt. radius (in.)	l.e.cir.cen.loc. from stack. z (in.)	line o (deg)
1	0.00614	0.00615	0.03403	0.50000	0.66270	0.61000	62.046	56.549	2.02543	-6.611	9.3752	0.48473	-5.280
2	0.00682	0.00686	0.03507	0.50000	0.63508	0.66300	61.065	55.480	2.02737	-5.160	9.0680	0.50145	-5.406
3	0.00751	0.00759	0.03744	0.50000	0.60532	0.76700	59.945	53.732	2.02656	-3.787	8.7545	0.52265	-5.518
4	0.00822	0.00834	0.04100	0.50000	0.57342	0.88600	58.660	51.711	2.02594	-2.439	8.4319	0.54695	-5.630
5	0.00895	0.00911	0.04561	0.50000	0.53954	0.98100	57.239	49.221	2.02554	-1.076	8.0986	0.57419	-5.741
6	0.00972	0.00991	0.05110	0.50000	0.50394	1.00000	55.718	46.031	2.02544	0.303	7.7514	0.60400	-5.850
7	0.01053	0.01075	0.05726	0.50000	0.46654	1.00000	54.155	41.968	2.02578	1.746	7.3862	0.63685	-5.952
8	0.01140	0.01163	0.06383	0.50000	0.42725	1.00000	52.589	36.760	2.02689	3.363	6.9982	0.67351	-6.043
9	0.01235	0.01256	0.07038	0.50000	0.40000	1.00000	51.128	30.009	2.02957	5.318	6.5811	0.71444	-6.121
10	0.01341	0.01357	0.07622	0.50000	0.40000	1.00000	50.352	20.164	2.03577	7.811	6.1192	0.76065	-6.180
11	0.01474	0.01476	0.07989	0.50000	0.40000	1.00000	52.662	-0.228	2.05176	11.213	5.5584	0.83368	-6.192

1 *** input station data ***

** input set no. 13 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
11.0100	11.0100	0.0577	0.0928

1 *** input station data ***

** input set no. 14 is a guide vane or stator **

tip c.g. axial location (inches)	hub c.g. axial location (inches)	inlet tip b. layer thick. (inches)	inlet hub b. layer thick. (inches)	blade dihedral angle (degrees)	range improvement bleed option
12.7000	12.7000	0.0564	0.0890	0.00	0.00000

number of blades	blade rotation option for stall margin	outlet tip b. layer thick. (inches)	outlet hub b. layer thick. (inches)
42		0.0556	0.0866

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

* table of input blade element definition parameters *

strm. no.	l.e.rad. /chord	t.e.rad. /chord	max.th. /chord	max.th. pt.loc. /chord	tran.pt. location /chord	segment in/out turn.rate	in.blade angle (deg)	out.blade angle (deg)	aero. chord (in.)	layout cone ang. (deg)	stack pt. radius (in.)	l.e.cir.cen.loc. from stack. line z (in.)	o (deg)
1	0.01387	0.01387	0.07967	0.50000	0.40000	1.00000	35.156	-15.591	1.75296	0.218	9.2437	0.81577	1.758
2	0.01323	0.01323	0.07807	0.50000	0.40000	1.00000	34.571	-12.796	1.75301	0.413	8.9689	0.81297	1.857
3	0.01257	0.01257	0.07643	0.50000	0.40000	1.00000	34.651	-10.900	1.75305	0.584	8.6891	0.80990	1.981
4	0.01190	0.01190	0.07476	0.50000	0.40000	1.00000	34.762	-9.901	1.75310	0.743	8.4021	0.80850	2.091
5	0.01121	0.01121	0.07304	0.50000	0.40000	1.00000	35.247	-9.401	1.75316	0.900	8.1069	0.80689	2.222
6	0.01050	0.01049	0.07125	0.50000	0.40000	1.00000	36.187	-9.202	1.75324	1.077	7.8010	0.80427	2.390
7	0.00975	0.00975	0.06938	0.50000	0.40000	1.00000	37.386	-9.103	1.75335	1.280	7.4815	0.80084	2.594
8	0.00897	0.00896	0.06742	0.50000	0.40000	1.00000	38.803	-9.304	1.75349	1.497	7.1458	0.79710	2.831
9	0.00814	0.00813	0.06535	0.50000	0.40000	1.00000	40.462	-9.603	1.75364	1.703	6.7902	0.79249	3.117
10	0.00724	0.00723	0.06311	0.50000	0.40000	1.00000	43.769	-11.099	1.75379	1.906	6.4061	0.78390	3.556
11	0.00621	0.00620	0.06051	0.50000	0.40000	1.00000	52.207	-15.990	1.75422	2.433	5.9636	0.76049	4.456

1 *** input station data ***

** input set no. 15 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
14.4400	14.4400	0.0552	0.0855

** input set no. 16 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
15.7000	16.0000	0.0549	0.0839

** input set no. 17 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
17.0000	17.6000	0.0538	0.0799

** input set no. 18 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
17.7500	18.6000	0.0529	0.0765

** input set no. 19 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

18.5000	19.6000	0.0521	0.0730

** input set no. 20 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
19.2500	20.6000	0.0511	0.0687

1 *** input station data ***

:

** input set no. 21 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
20.0000	21.5000	0.0500	0.0649

radius array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	10.0990	9.6525	9.1843	8.6909	8.1678	7.6088	7.0053	6.3447	5.6067	4.7556	3.7144
2	*	10.0948	9.6462	9.1758	8.6799	8.1539	7.5915	6.9840	6.3184	5.5738	4.7130	3.6548
3	*	10.0912	9.6407	9.1680	8.6697	8.1409	7.5753	6.9639	6.2933	5.5422	4.6720	3.5969
4	*	10.0878	9.6356	9.1611	8.6606	8.1294	7.5609	6.9461	6.2713	5.5145	4.6358	3.5457
5	*	10.0787	9.6283	9.1558	8.6575	8.1288	7.5632	6.9517	6.2809	5.5294	4.6582	3.5810
6	*	10.0698	9.6215	9.1513	8.6556	8.1297	7.5673	6.9596	6.2935	5.5480	4.6854	3.6229
7	*	10.0652	9.6219	9.1573	8.6677	8.1488	7.5945	6.9964	6.3422	5.6123	4.7719	3.7477
8	*	10.0542	9.6149	9.1545	8.6696	8.1560	7.6078	7.0170	6.3715	5.6528	4.8283	3.8302
9	*	9.6872	9.3116	8.9202	8.5109	8.0808	7.6265	7.1434	6.6251	6.0627	5.4425	4.7419
10	*	9.5746	9.2124	8.8353	8.4414	8.0283	7.5926	7.1304	6.6361	6.1019	5.5161	4.8603
11	*	9.5376	9.1835	8.8151	8.4307	8.0280	7.6039	7.1547	6.6753	6.1588	5.5947	4.9671
12	*	9.5268	9.1849	8.8297	8.4597	8.0727	7.6662	7.2370	6.7806	6.2911	5.7603	5.1752
13	*	9.5337	9.1961	8.8456	8.4807	8.0993	7.6991	7.2769	6.8287	6.3489	5.8297	5.2595
14	*	9.4327	9.1096	8.7747	8.4264	8.0631	7.6826	7.2823	6.8587	6.4071	5.9212	5.3916
15	*	9.3129	9.0199	8.7171	8.4033	8.0774	7.7378	7.3825	7.0093	6.6150	6.1957	5.7459
16	*	9.2570	8.9751	8.6841	8.3830	8.0706	7.7457	7.4065	7.0511	6.6767	6.2800	5.8566
17	*	9.2405	8.9647	8.6801	8.3859	8.0810	7.7641	7.4338	7.0880	6.7245	6.3402	5.9310
18	*	9.2471	8.9755	8.6954	8.4060	8.1063	7.7951	7.4709	7.1320	6.7761	6.4005	6.0015
19	*	9.2481	8.9785	8.7006	8.4135	8.1162	7.8077	7.4864	7.1507	6.7985	6.4269	6.0326
20	*	9.2428	8.9771	8.7032	8.4204	8.1278	7.8243	7.5085	7.1788	6.8333	6.4693	6.0836
21	*	9.2657	9.0097	8.7461	8.4744	8.1937	7.9030	7.6012	7.2869	6.9584	6.6136	6.2499
22	*	9.3553	9.1087	8.8552	8.5942	8.3251	8.0470	7.7589	7.4597	7.1479	6.8220	6.4797
23	*	9.5226	9.2873	9.0459	8.7979	8.5426	8.2795	8.0078	7.7265	7.4346	7.1307	6.8133
24	*	9.7661	9.5467	9.3221	9.0919	8.8558	8.6132	8.3635	8.1062	7.8404	7.5653	7.2798
25	*	10.1062	9.9008	9.6911	9.4767	9.2573	9.0326	8.8022	8.5656	8.3223	8.0716	7.8129

i	ift	z(ift,jm)	i	z(i,j)	ar
1	1	-11.0000	1	-11.0000	0.0000
2	2	-9.0000	2	-9.0000	3.2200
3	3	-7.0000	3	-7.0000	3.2471
4	4	-5.2000	4	-5.2000	3.6345
5	5	-3.7000	5	-3.7000	4.3318
6	6	-2.4158	6	-2.4158	5.0202

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

7	7	-1.1941	7	-1.1941	5.1713
8	9	2.6524	8	-0.5437	9.5688
9	11	4.1961	9	2.6524	1.5473
10	12	6.3346	10	3.1253	9.9685
11	13	7.3400	11	4.1961	4.2681
12	14	8.5705	12	6.3346	2.0348
13	15	9.8709	13	7.3400	4.2514
14	16	11.0100	14	8.5705	3.2841
15	17	11.8776	15	9.8709	2.7429
16	18	13.5824	16	11.0100	2.9852
17	19	14.4400	17	11.8776	3.8144
18	20	15.8340	18	13.5824	1.9039
19	21	17.2699	19	14.4400	3.7493
20	22	18.1351	20	15.8340	2.2663
21	23	19.0028	21	17.2699	2.1003
22	24	19.8740	22	18.1351	3.3236
23	25	20.7003	23	19.0028	3.1223
			24	19.8740	2.8540
			25	20.7003	2.7754

z array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000
2	*	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000
3	*	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000
4	*	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000
5	*	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000
6	*	-2.3013	-2.3218	-2.3433	-2.3660	-2.3901	-2.4158	-2.4436	-2.4741	-2.5081	-2.5476	-2.5962
7	*	-1.0027	-1.0371	-1.0731	-1.1110	-1.1512	-1.1941	-1.2405	-1.2911	-1.3477	-1.4128	-1.4921
8	*	-0.9429	-0.7890	-0.6785	-0.6087	-0.5633	-0.5437	-0.5600	-0.6198	-0.7618	-0.9417	-1.1249
9	*	1.5889	2.0072	2.2943	2.4444	2.5573	2.6524	2.7209	2.7631	2.7053	2.6886	2.7828
10	*	3.0034	3.0257	3.0489	3.0731	3.0985	3.1253	3.1537	3.1841	3.2169	3.2529	3.2932
11	*	4.1826	4.1922	4.1947	4.1959	4.1964	4.1961	4.1955	4.1945	4.1925	4.1864	4.1742
12	*	6.3435	6.3343	6.3326	6.3325	6.3331	6.3346	6.3367	6.3394	6.3430	6.3492	6.3592
13	*	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400
14	*	8.7029	8.6845	8.6610	8.6340	8.6037	8.5705	8.5341	8.4939	8.4507	8.4027	8.3373
15	*	9.7328	9.7515	9.7763	9.8038	9.8351	9.8709	9.9123	9.9596	10.0125	10.0734	10.1427
16	*	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100
17	*	11.8599	11.8638	11.8681	11.8707	11.8736	11.8776	11.8825	11.8877	11.8940	11.9050	11.9286
18	*	13.5877	13.5857	13.5840	13.5830	13.5825	13.5824	13.5823	13.5827	13.5832	13.5857	13.5931
19	*	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400
20	*	15.7050	15.7292	15.7541	15.7798	15.8064	15.8340	15.8628	15.8928	15.9242	15.9573	15.9924
21	*	17.0102	17.0590	17.1092	17.1610	17.2145	17.2699	17.3274	17.3874	17.4500	17.5157	17.5850
22	*	17.7645	17.8344	17.9062	17.9801	18.0563	18.1351	18.2167	18.3015	18.3898	18.4822	18.5791
23	*	18.5190	18.6106	18.7046	18.8011	18.9004	19.0028	19.1086	19.2181	19.3317	19.4500	19.5735
24	*	19.2737	19.3879	19.5049	19.6247	19.7477	19.8740	20.0040	20.1380	20.2764	20.4196	20.5683
25	*	20.0268	20.1557	20.2873	20.4218	20.5594	20.7003	20.8449	20.9933	21.1459	21.3032	21.4655

to array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
2	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
3	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
4	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
5	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
6	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
7	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

8	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
9	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
10	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
11	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
12	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
13	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
14	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
15	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
16	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
17	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
18	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
19	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
20	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
21	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
22	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
23	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
24	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
25	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33

po array

i	1	2	3	4	5	6	7	8	9	10	11
1	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
2	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
3	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
4	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
5	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
6	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
7	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
8	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
9	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20
10	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20
11	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20
12	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83
13	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83
14	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83
15	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86
16	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86
17	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86
18	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
19	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
20	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
21	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
22	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
23	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
24	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
25	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52

vz array

i	1	2	3	4	5	6	7	8	9	10	11
1	569.25	569.25	569.25	569.25	569.25	569.25	569.25	569.25	569.25	569.25	569.25
2	566.23	566.23	566.23	566.23	566.23	566.23	566.23	566.23	566.23	566.23	566.23
3	563.27	563.27	563.27	563.27	563.27	563.27	563.27	563.27	563.27	563.27	563.27
4	560.77	560.77	560.77	560.77	560.77	560.77	560.77	560.77	560.77	560.77	560.77
5	564.44	564.44	564.44	564.44	564.44	564.44	564.44	564.44	564.44	564.44	564.44
6	567.74	567.74	567.74	567.74	567.74	567.74	567.74	567.74	567.74	567.74	567.74
7	575.11	575.11	575.11	575.11	575.11	575.11	575.11	575.11	575.11	575.11	575.11
8	584.74	584.74	584.74	584.74	584.74	584.74	584.74	584.74	584.74	584.74	584.74

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

9	*	519.02	519.02	519.02	519.02	519.02	519.02	519.02	519.02	519.02	519.02	519.02
10	*	559.25	559.25	559.25	559.25	559.25	559.25	559.25	559.25	559.25	559.25	559.25
11	*	586.47	586.47	586.47	586.47	586.47	586.47	586.47	586.47	586.47	586.47	586.47
12	*	552.24	552.24	552.24	552.24	552.24	552.24	552.24	552.24	552.24	552.24	552.24
13	*	558.77	558.77	558.77	558.77	558.77	558.77	558.77	558.77	558.77	558.77	558.77
14	*	602.66	602.66	602.66	602.66	602.66	602.66	602.66	602.66	602.66	602.66	602.66
15	*	516.57	516.57	516.57	516.57	516.57	516.57	516.57	516.57	516.57	516.57	516.57
16	*	555.17	555.17	555.17	555.17	555.17	555.17	555.17	555.17	555.17	555.17	555.17
17	*	567.90	567.90	567.90	567.90	567.90	567.90	567.90	567.90	567.90	567.90	567.90
18	*	527.93	527.93	527.93	527.93	527.93	527.93	527.93	527.93	527.93	527.93	527.93
19	*	532.63	532.63	532.63	532.63	532.63	532.63	532.63	532.63	532.63	532.63	532.63
20	*	539.61	539.61	539.61	539.61	539.61	539.61	539.61	539.61	539.61	539.61	539.61
21	*	557.80	557.80	557.80	557.80	557.80	557.80	557.80	557.80	557.80	557.80	557.80
22	*	561.43	561.43	561.43	561.43	561.43	561.43	561.43	561.43	561.43	561.43	561.43
23	*	559.47	559.47	559.47	559.47	559.47	559.47	559.47	559.47	559.47	559.47	559.47
24	*	556.07	556.07	556.07	556.07	556.07	556.07	556.07	556.07	556.07	556.07	556.07
25	*	547.72	547.72	547.72	547.72	547.72	547.72	547.72	547.72	547.72	547.72	547.72

vth array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	*	381.89	397.29	414.72	434.67	457.80	485.07	517.88	558.39	610.19	679.72	780.15
10	*	386.38	401.57	418.71	438.25	460.80	487.24	518.82	557.47	606.28	670.65	761.15
11	*	387.88	402.83	419.67	438.80	460.82	486.52	517.06	554.19	600.67	661.23	744.79
12	*	19.45	20.18	20.99	21.91	22.96	24.17	25.61	27.33	29.46	32.17	35.81
13	*	19.44	20.15	20.95	21.85	22.88	24.07	25.47	27.14	29.19	31.79	35.24
14	*	19.65	20.34	21.12	21.99	22.98	24.12	25.45	27.02	28.93	31.30	34.37
15	*	417.13	430.68	445.65	462.29	480.94	502.05	526.21	554.23	587.26	627.01	676.09
16	*	419.66	432.84	447.34	463.41	481.34	501.54	524.50	550.95	581.84	618.59	663.31
17	*	420.40	433.34	447.54	463.25	480.73	500.35	522.58	548.07	577.70	612.72	654.99
18	*	18.16	18.71	19.32	19.98	20.72	21.55	22.48	23.55	24.79	26.24	27.99
19	*	18.16	18.71	19.31	19.96	20.70	21.51	22.44	23.49	24.71	26.14	27.84
20	*	18.17	18.71	19.30	19.95	20.67	21.47	22.37	23.40	24.58	25.96	27.61
21	*	18.13	18.64	19.20	19.82	20.50	21.25	22.10	23.05	24.14	25.40	26.88
22	*	17.95	18.44	18.97	19.54	20.18	20.87	21.65	22.52	23.50	24.62	25.92
23	*	17.64	18.09	18.57	19.09	19.66	20.29	20.98	21.74	22.59	23.56	24.65
24	*	17.20	17.59	18.02	18.47	18.97	19.50	20.08	20.72	21.42	22.20	23.07
25	*	16.62	16.97	17.33	17.72	18.14	18.60	19.08	19.61	20.18	20.81	21.50

slope array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	-0.0022	-0.0033	-0.0045	-0.0059	-0.0075	-0.0093	-0.0114	-0.0142	-0.0178	-0.0230	-0.0321
2	*	-0.0020	-0.0029	-0.0039	-0.0051	-0.0064	-0.0078	-0.0096	-0.0119	-0.0148	-0.0192	-0.0268
3	*	-0.0015	-0.0027	-0.0041	-0.0057	-0.0075	-0.0096	-0.0122	-0.0154	-0.0196	-0.0258	-0.0368
4	*	-0.0028	-0.0030	-0.0029	-0.0027	-0.0025	-0.0022	-0.0019	-0.0015	-0.0010	-0.0005	0.0004
5	*	-0.0113	-0.0085	-0.0062	-0.0040	-0.0018	0.0007	0.0035	0.0069	0.0114	0.0178	0.0286
6	*	0.0103	0.0071	0.0066	0.0078	0.0098	0.0128	0.0169	0.0226	0.0304	0.0426	0.0663
7	*	-0.0577	-0.0325	-0.0152	-0.0015	0.0118	0.0255	0.0403	0.0576	0.0805	0.1118	0.1594
8	*	-0.0662	-0.0538	-0.0368	-0.0192	0.0002	0.0215	0.0447	0.0707	0.1024	0.1395	0.2093
9	*	-0.1340	-0.1015	-0.0805	-0.0610	-0.0399	-0.0159	0.0121	0.0455	0.0840	0.1318	0.2013

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

10	*	-0.0437	-0.0594	-0.0623	-0.0536	-0.0393	-0.0197	0.0053	0.0357	0.0667	0.1052	0.1863
11	*	-0.0169	-0.0234	-0.0245	-0.0196	-0.0113	0.0004	0.0161	0.0357	0.0569	0.0833	0.1271
12	*	0.0143	0.0217	0.0286	0.0347	0.0407	0.0465	0.0523	0.0581	0.0647	0.0721	0.0786
13	*	-0.0202	-0.0184	-0.0156	-0.0113	-0.0055	0.0023	0.0125	0.0259	0.0433	0.0668	0.1013
14	*	-0.1177	-0.0911	-0.0646	-0.0385	-0.0129	0.0127	0.0387	0.0658	0.0954	0.1293	0.1711
15	*	-0.0882	-0.0639	-0.0396	-0.0160	0.0071	0.0298	0.0525	0.0756	0.1005	0.1289	0.1632
16	*	-0.0228	-0.0183	-0.0132	-0.0071	0.0003	0.0092	0.0200	0.0334	0.0502	0.0718	0.1005
17	*	-0.0109	-0.0042	0.0028	0.0099	0.0172	0.0246	0.0323	0.0402	0.0481	0.0558	0.0620
18	*	0.0054	0.0071	0.0089	0.0109	0.0131	0.0156	0.0184	0.0218	0.0257	0.0304	0.0368
19	*	-0.0017	0.0008	0.0035	0.0062	0.0091	0.0122	0.0155	0.0191	0.0230	0.0273	0.0323
20	*	-0.0069	-0.0022	0.0026	0.0075	0.0126	0.0180	0.0236	0.0295	0.0358	0.0427	0.0503
21	*	0.0697	0.0783	0.0872	0.0963	0.1058	0.1157	0.1262	0.1374	0.1495	0.1627	0.1774
22	*	0.1708	0.1792	0.1879	0.1969	0.2064	0.2165	0.2272	0.2388	0.2514	0.2654	0.2812
23	*	0.2687	0.2783	0.2883	0.2987	0.3098	0.3216	0.3342	0.3478	0.3628	0.3794	0.3980
24	*	0.3879	0.3991	0.4108	0.4231	0.4362	0.4501	0.4650	0.4812	0.4990	0.5185	0.5403
25	*	0.5024	0.5110	0.5203	0.5304	0.5415	0.5537	0.5671	0.5819	0.5983	0.6166	0.6373

rcurve array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0009	0.0010
2	*	0.0002	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	-0.0001	-0.0002	0.0020
3	*	0.0001	-0.0001	0.0002	0.0006	0.0010	0.0016	0.0022	0.0030	0.0040	0.0055	-0.0066
4	*	-0.0021	-0.0013	-0.0003	0.0007	0.0018	0.0031	0.0046	0.0065	0.0090	0.0127	0.0432
5	*	-0.0049	0.0022	0.0026	0.0034	0.0044	0.0058	0.0075	0.0099	0.0132	0.0184	-0.0031
6	*	0.0212	-0.0098	-0.0045	-0.0002	0.0039	0.0082	0.0130	0.0187	0.0263	0.0368	0.0762
7	*	-0.1086	-0.0227	-0.0158	-0.0106	-0.0057	-0.0006	0.0048	0.0110	0.0184	0.0275	0.0614
8	*	-0.1046	-0.0400	-0.0277	-0.0200	-0.0136	-0.0077	-0.0018	0.0045	0.0124	0.0218	0.0432
9	*	0.0586	0.0047	0.0037	0.0026	0.0014	0.0001	-0.0014	-0.0033	-0.0060	-0.0096	-0.0417
10	*	0.0344	0.0287	0.0227	0.0168	0.0110	0.0050	-0.0013	-0.0080	-0.0160	-0.0263	-0.0414
11	*	0.0131	0.0238	0.0226	0.0204	0.0173	0.0132	0.0079	0.0012	-0.0064	-0.0158	-0.0392
12	*	0.0162	-0.0076	-0.0069	-0.0069	-0.0071	-0.0072	-0.0073	-0.0072	-0.0059	-0.0034	-0.0036
13	*	-0.0813	-0.0407	-0.0342	-0.0275	-0.0206	-0.0134	-0.0058	0.0026	0.0120	0.0233	0.0467
14	*	-0.0413	-0.0140	-0.0081	-0.0025	0.0028	0.0077	0.0121	0.0160	0.0197	0.0232	0.0660
15	*	0.0836	0.0264	0.0191	0.0120	0.0052	-0.0012	-0.0072	-0.0131	-0.0188	-0.0249	-0.0732
16	*	0.0095	0.0257	0.0193	0.0128	0.0063	-0.0004	-0.0075	-0.0152	-0.0242	-0.0355	-0.0471
17	*	0.0251	0.0119	0.0105	0.0088	0.0067	0.0040	0.0005	-0.0040	-0.0099	-0.0178	-0.0350
18	*	-0.0076	0.0005	-0.0004	-0.0014	-0.0025	-0.0036	-0.0048	-0.0061	-0.0075	-0.0090	0.0029
19	*	-0.0043	-0.0013	-0.0002	0.0009	0.0019	0.0029	0.0038	0.0045	0.0052	0.0057	-0.0121
20	*	0.0060	0.0309	0.0324	0.0340	0.0354	0.0369	0.0384	0.0399	0.0415	0.0431	0.0447
21	*	0.1095	0.0891	0.0881	0.0873	0.0865	0.0858	0.0853	0.0848	0.0845	0.0843	0.1019
22	*	0.1352	0.1197	0.1167	0.1138	0.1111	0.1085	0.1061	0.1038	0.1015	0.0994	0.0884
23	*	0.1114	0.1241	0.1211	0.1182	0.1155	0.1129	0.1104	0.1080	0.1057	0.1033	0.1106
24	*	0.1513	0.1158	0.1117	0.1078	0.1042	0.1007	0.0975	0.0943	0.0912	0.0882	0.0942
25	*	0.0666	0.0836	0.0796	0.0759	0.0725	0.0692	0.0661	0.0631	0.0603	0.0574	0.0415

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*** computed compressor parameters for a rotational speed of 16042.8 rpm which is a speed fraction of 1.0000 ***

** the corrected weightflow per unit of casing annular area at the inlet face of the first blade row is 38.90 lbs/sec/ft sq **

** mass averaged rotor and stage aerodynamic parameters **

stage no.	blade type	flow coef.	head coef.	id. head coef.	press. ratio	temp. ratio	adia. eff.	poly. eff.	reset angle (deg)	for. ax. thrust (lbs)	gas bending moments for. ax. (ft-lbs)	tang. (ft-lbs)	torque (ft-lbs)	power (hp)
1	rotor	0.4445	0.2412	0.2630	1.6462	1.1605	0.9170	0.9224	0.00	1057.26	17.651	-12.757	703.85	2149.95
1	stator	0.4149	0.2284	0.2630	1.6061	1.1605	0.8686	0.8768	0.00	-229.24	2.376	6.061		

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

2	rotor	0.4607	0.2731	0.2906	1.5527	1.1345	0.9397	0.9431	0.00	1208.74	7.058	-4.819	697.02	2129.08
2	stator	0.4161	0.2607	0.2906	1.5235	1.1346	0.8969	0.9022	0.00	-257.39	1.498	3.614		

** cumulative sums of mass averaged rotor and stage aerodydamic parameters **

stage no.	blade type	weight flow (lbs/sec)	total press. (psia)	total temp. (deg. r.)	press. ratio	temp. ratio	head coef.	ideal head coef.	adia. eff.	poly. eff.	for. ax. thrust (lbs)	torque (ft-lbs)	power (hp)	fract energy
1	inlet	73.30	14.666	518.70										
1	rotor	73.30	24.143	601.97	1.6462	1.1605	0.2412	0.2630	0.9170	0.9224	1057.26	703.85	2149.95	0.5023
1	stator	73.30	23.555	601.97	1.6061	1.1605	0.2284	0.2630	0.8686	0.8768	828.03			
2	rotor	73.30	36.572	682.98	2.4937	1.3167	0.4688	0.5236	0.8954	0.9073	1889.22	1401.16	4279.91	1.0000
2	stator	73.30	35.887	682.98	2.4470	1.3167	0.4579	0.5236	0.8745	0.8885	1631.83			

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** values of parameters on streamlines at station, 1, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.099	-11.000												
1	10.099	-11.000	514.40	514.40	0.00	514.40	0.4727	0.00	-0.13	0.000	14.142	518.70	12.151	497.25
2	9.632	-11.000	571.81	571.82	0.00	571.82	0.5281	0.00	-0.15	0.000	14.670	518.70	12.150	492.18
3	9.167	-11.000	574.77	574.78	0.00	574.78	0.5310	0.00	-0.22	0.000	14.700	518.70	12.151	491.90
4	8.675	-11.000	574.69	574.69	0.00	574.69	0.5309	0.00	-0.30	0.000	14.700	518.70	12.152	491.91
5	8.154	-11.000	574.57	574.58	0.00	574.58	0.5308	0.00	-0.38	0.000	14.700	518.70	12.152	491.92
6	7.597	-11.000	574.41	574.43	0.00	574.43	0.5306	0.00	-0.48	0.000	14.700	518.70	12.154	491.93
7	6.996	-11.000	574.20	574.23	0.00	574.23	0.5305	0.00	-0.60	0.001	14.700	518.70	12.155	491.95
8	6.338	-11.000	573.95	573.99	0.00	573.99	0.5302	0.00	-0.75	0.001	14.700	518.70	12.157	491.97
9	5.603	-11.000	573.64	573.72	0.00	573.72	0.5300	0.00	-0.94	0.001	14.700	518.70	12.160	492.00
10	4.755	-11.000	573.30	573.43	0.00	573.43	0.5297	0.00	-1.23	0.000	14.700	518.70	12.162	492.03
11	3.714	-11.000	568.59	568.88	0.00	568.88	0.5253	0.00	-1.84	0.001	14.660	518.70	12.166	492.45
hub	3.714	-11.000												

** values of parameters on streamlines at station, 2, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.099	-9.000												
1	10.095	-9.000	516.05	516.05	0.00	516.05	0.4743	0.00	-0.11	0.000	14.178	518.70	12.170	497.11
2	9.627	-9.000	569.34	569.34	0.00	569.34	0.5257	0.00	-0.13	0.000	14.669	518.70	12.170	492.41
3	9.160	-9.000	572.19	572.19	0.00	572.19	0.5285	0.00	-0.18	0.000	14.698	518.70	12.170	492.14
4	8.666	-9.000	572.03	572.03	0.00	572.03	0.5283	0.00	-0.24	0.001	14.698	518.70	12.172	492.16
5	8.142	-9.000	571.80	571.81	0.00	571.81	0.5281	0.00	-0.31	0.001	14.698	518.70	12.174	492.18
6	7.582	-9.000	571.50	571.52	0.00	571.52	0.5278	0.00	-0.40	0.001	14.698	518.70	12.176	492.20
7	6.977	-9.000	571.12	571.15	0.00	571.15	0.5275	0.00	-0.51	0.001	14.698	518.70	12.179	492.24
8	6.314	-9.000	570.66	570.69	0.00	570.69	0.5270	0.00	-0.65	0.001	14.698	518.70	12.183	492.28

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

9	5.572	-9.000	570.11	570.18	0.00	570.18	0.5265	0.00	-0.85	0.001	14.698	518.70	12.187	492.33
10	4.713	-9.000	569.52	569.64	0.00	569.64	0.5260	0.00	-1.15	0.001	14.698	518.70	12.192	492.38
11	3.655	-9.000	564.50	564.71	0.00	564.71	0.5212	0.00	-1.54	0.002	14.658	518.70	12.199	492.83
hub	3.643	-9.000												

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** values of parameters on streamlines at station, 3, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.100	-7.000												
1	10.091	-7.000	517.54	517.54	0.00	517.54	0.4758	0.00	-0.09	0.000	14.209	518.70	12.186	496.98
2	9.624	-7.000	567.28	567.28	0.00	567.28	0.5237	0.00	-0.08	0.000	14.668	518.70	12.186	492.60
3	9.154	-7.000	570.02	570.02	0.00	570.02	0.5264	0.00	-0.11	0.001	14.696	518.70	12.187	492.34
4	8.659	-7.000	569.76	569.76	0.00	569.76	0.5261	0.00	-0.14	0.001	14.696	518.70	12.189	492.37
5	8.134	-7.000	569.35	569.36	0.00	569.36	0.5257	0.00	-0.18	0.002	14.696	518.70	12.192	492.40
6	7.571	-7.000	568.75	568.75	0.00	568.75	0.5251	0.00	-0.23	0.002	14.696	518.70	12.197	492.46
7	6.963	-7.000	567.88	567.89	0.00	567.89	0.5243	0.00	-0.30	0.003	14.696	518.70	12.204	492.54
8	6.295	-7.000	566.67	566.68	0.00	566.68	0.5231	0.00	-0.41	0.003	14.696	518.70	12.214	492.65
9	5.546	-7.000	565.07	565.10	0.00	565.10	0.5216	0.00	-0.60	0.004	14.696	518.70	12.227	492.80
10	4.676	-7.000	563.17	563.25	0.00	563.25	0.5198	0.00	-0.98	0.003	14.696	518.70	12.242	492.97
11	3.597	-7.000	559.49	559.87	0.00	559.87	0.5165	0.00	-2.11	-0.007	14.656	518.70	12.237	493.28
hub	3.572	-7.000												

** values of parameters on streamlines at station, 4, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.101	-5.200												
1	10.088	-5.200	520.17	520.17	0.00	520.17	0.4783	0.00	-0.16	-0.002	14.234	518.70	12.187	496.76
2	9.621	-5.200	567.49	567.49	0.00	567.49	0.5239	0.00	-0.13	-0.001	14.667	518.70	12.183	492.58
3	9.152	-5.200	570.56	570.56	0.00	570.56	0.5269	0.00	-0.09	0.000	14.695	518.70	12.181	492.29
4	8.657	-5.200	570.47	570.47	0.00	570.47	0.5268	0.00	-0.04	0.001	14.695	518.70	12.182	492.30
5	8.131	-5.200	569.98	569.98	0.00	569.98	0.5263	0.00	0.03	0.002	14.695	518.70	12.186	492.35
6	7.568	-5.200	569.00	569.00	0.00	569.00	0.5254	0.00	0.09	0.004	14.695	518.70	12.194	492.44
7	6.959	-5.200	567.39	567.39	0.00	567.39	0.5238	0.00	0.14	0.005	14.695	518.70	12.207	492.59
8	6.290	-5.200	564.90	564.90	0.00	564.90	0.5214	0.00	0.17	0.008	14.695	518.70	12.228	492.82
9	5.537	-5.200	560.98	560.98	0.00	560.98	0.5176	0.00	0.17	0.011	14.695	518.70	12.260	493.17
10	4.658	-5.200	554.29	554.29	0.00	554.29	0.5111	0.00	0.07	0.017	14.695	518.70	12.314	493.78
11	3.546	-5.200	532.01	532.01	0.00	532.01	0.4896	0.00	0.02	0.043	14.655	518.70	12.457	495.75
hub	3.507	-5.200												

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TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

** values of parameters on streamlines at station, 5, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.101	-3.700												
1	10.079	-3.700	527.31	527.34	0.00	527.34	0.4852	0.00	-0.65	-0.005	14.253	518.70	12.150	496.15
2	9.616	-3.700	572.30	572.31	0.00	572.31	0.5286	0.00	-0.29	-0.001	14.666	518.70	12.143	492.13
3	9.149	-3.700	575.09	575.10	0.00	575.10	0.5313	0.00	-0.09	0.001	14.694	518.70	12.143	491.87
4	8.657	-3.700	574.82	574.82	0.00	574.82	0.5310	0.00	0.08	0.001	14.694	518.70	12.145	491.90
5	8.134	-3.700	574.22	574.23	0.00	574.23	0.5305	0.00	0.25	0.003	14.694	518.70	12.150	491.95
6	7.575	-3.700	573.10	573.11	0.00	573.11	0.5294	0.00	0.45	0.004	14.694	518.70	12.159	492.06
7	6.970	-3.700	571.07	571.11	0.00	571.11	0.5274	0.00	0.69	0.007	14.694	518.70	12.176	492.24
8	6.305	-3.700	567.60	567.68	0.00	567.68	0.5241	0.00	0.97	0.011	14.694	518.70	12.204	492.56
9	5.556	-3.700	561.94	562.09	0.00	562.09	0.5187	0.00	1.30	0.015	14.694	518.70	12.250	493.07
10	4.681	-3.700	553.23	553.46	0.00	553.46	0.5103	0.00	1.64	0.020	14.694	518.70	12.320	493.86
11	3.581	-3.700	544.15	544.37	0.00	544.37	0.5015	0.00	1.64	-0.003	14.654	518.70	12.359	494.67
hub	3.518	-3.700												

** values of parameters on streamlines at station, 6, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.099	-2.300												
1	10.070	-2.301	538.38	538.41	0.00	538.41	0.4958	0.00	0.59	0.021	14.269	518.70	12.079	495.19
2	9.611	-2.322	577.50	577.50	0.00	577.50	0.5336	0.00	0.11	0.002	14.666	518.70	12.100	491.64
3	9.147	-2.344	580.54	580.54	0.00	580.54	0.5366	0.00	-0.02	-0.004	14.693	518.70	12.097	491.36
4	8.658	-2.366	581.80	581.80	0.00	581.80	0.5378	0.00	0.06	-0.005	14.693	518.70	12.087	491.24
5	8.140	-2.390	582.87	582.88	0.00	582.88	0.5389	0.00	0.30	-0.003	14.693	518.70	12.078	491.14
6	7.588	-2.415	582.88	582.92	0.00	582.92	0.5389	0.00	0.69	0.001	14.693	518.70	12.077	491.13
7	6.991	-2.442	581.06	581.18	0.00	581.18	0.5372	0.00	1.20	0.007	14.693	518.70	12.092	491.30
8	6.335	-2.472	576.53	576.83	0.00	576.83	0.5330	0.00	1.83	0.014	14.693	518.70	12.128	491.71
9	5.597	-2.506	568.08	568.65	0.00	568.65	0.5250	0.00	2.57	0.022	14.693	518.70	12.195	492.47
10	4.730	-2.546	553.40	554.36	0.00	554.36	0.5112	0.00	3.37	0.034	14.693	518.70	12.311	493.77
11	3.623	-2.596	516.51	517.64	0.00	517.64	0.4758	0.00	3.79	0.076	14.653	518.70	12.566	496.97
hub	3.540	-2.600												

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** values of parameters on streamlines at station, 7, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.100	-1.000												
1	10.065	-1.003	503.32	504.16	0.00	504.16	0.4629	0.00	-3.30	-0.109	14.282	518.70	12.347	498.09
2	9.594	-1.039	567.73	568.38	0.00	568.38	0.5248	0.00	-2.75	-0.066	14.665	518.70	12.175	492.49
3	9.129	-1.075	585.24	585.66	0.00	585.66	0.5416	0.00	-2.15	-0.044	14.692	518.70	12.054	490.87
4	8.647	-1.113	595.48	595.67	0.00	595.67	0.5514	0.00	-1.45	-0.029	14.692	518.70	11.969	489.91
5	8.139	-1.152	601.95	601.98	0.00	601.98	0.5575	0.00	-0.60	-0.017	14.692	518.70	11.916	489.30

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

6	7.601	-1.194	604.69	604.70	0.00	604.70	0.5602	0.00	0.42	-0.006	14.692	518.70	11.892	489.03
7	7.021	-1.239	603.31	603.54	0.00	603.54	0.5591	0.00	1.59	0.004	14.692	518.70	11.902	489.14
8	6.384	-1.288	597.19	597.97	0.00	597.97	0.5536	0.00	2.92	0.014	14.692	518.70	11.950	489.69
9	5.667	-1.343	585.12	586.88	0.00	586.88	0.5428	0.00	4.44	0.026	14.692	518.70	12.043	490.76
10	4.825	-1.409	564.31	567.72	0.00	567.72	0.5241	0.00	6.28	0.041	14.692	518.70	12.202	492.56
11	3.748	-1.492	523.13	529.73	0.00	529.73	0.4875	0.00	9.05	0.061	14.653	518.70	12.472	495.94
hub	3.646	-1.500												

1

** values of parameters on streamlines at station, 8, which is the inlet of rotor number, 1 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.034	0.197												
1	9.913	0.164	583.34	584.62	0.00	584.62	0.5406	0.00	-3.79	-0.105	14.294	518.70	11.736	490.97
2	9.490	0.049	633.04	637.15	0.00	637.15	0.5922	0.00	-6.51	-0.026	14.665	518.70	11.588	485.75
3	9.055	-0.008	641.47	643.60	0.00	643.60	0.5986	0.00	-4.66	-0.018	14.691	518.70	11.551	485.08
4	8.599	-0.072	645.10	646.04	0.00	646.04	0.6010	0.00	-3.09	-0.012	14.691	518.70	11.530	484.82
5	8.117	-0.146	645.55	645.79	0.00	645.79	0.6008	0.00	-1.57	-0.007	14.691	518.70	11.532	484.85
6	7.601	-0.228	643.05	643.06	0.00	643.06	0.5981	0.00	0.06	-0.002	14.691	518.70	11.556	485.13
7	7.043	-0.322	637.10	637.41	0.00	637.41	0.5925	0.00	1.80	0.003	14.691	518.70	11.607	485.72
8	6.428	-0.435	627.22	628.49	0.00	628.49	0.5836	0.00	3.65	0.010	14.691	518.70	11.685	486.64
9	5.733	-0.561	612.28	615.33	0.00	615.33	0.5707	0.00	5.70	0.018	14.691	518.70	11.800	487.97
10	4.914	-0.722	589.87	595.80	0.00	595.80	0.5515	0.00	8.09	0.029	14.691	518.70	11.968	489.90
11	3.883	-0.879	557.25	569.33	0.00	569.33	0.5257	0.00	11.82	0.043	14.652	518.70	12.156	492.41
hub	3.762	-0.898												

streamline no.	r/rtip	rel.flow angle (deg)	rel. tang.vel. (ft/sec)	rel. vel. (ft/sec)	rel.mach number	wheel speed (ft/sec)	flow coef.
tip	1.0000					1404.81	
1	0.9879	67.16	1387.87	1505.98	1.3925	1387.87	0.4152
2	0.9457	64.38	1328.58	1473.46	1.3695	1328.58	0.4506
3	0.9024	63.08	1267.74	1421.76	1.3223	1267.74	0.4566
4	0.8569	61.78	1203.82	1366.22	1.2710	1203.82	0.4592
5	0.8089	60.39	1136.32	1307.01	1.2159	1136.32	0.4595
6	0.7575	58.86	1064.19	1243.39	1.1564	1064.19	0.4578
7	0.7019	57.12	986.07	1174.15	1.0913	986.07	0.4535
8	0.6406	55.07	899.95	1097.68	1.0193	899.95	0.4465
9	0.5713	52.52	802.57	1011.31	0.9379	802.57	0.4358
10	0.4898	49.11	688.02	910.14	0.8425	688.02	0.4199
11	0.3870	43.68	543.68	787.23	0.7269	543.68	0.3967
hub	0.3749						

		inlet streamline				streamline element					
streamline no.	pct. pass.	inc. angle (deg)	ref. inc. (deg)	s.s.inc. angle (deg)	in.blade angle (deg)	element slope (deg)	mach no. at shock location	sh.loc. as fract of s.s.	cov.chan. as fract of s.s.	min.chk. area margin	min.chk. pt.loc.in cov.chan.
1	1.93	1.19	-2.25	-0.92	65.97	-8.82	1.4852	0.6871	0.3129	-0.0049	0.2135
2	8.68	1.24	-2.08	-0.94	63.14	-6.37	1.4479	0.6422	0.3578	0.0012	0.3969
3	15.61	1.87	-1.96	-0.53	61.22	-4.60	1.4004	0.6047	0.3953	0.0086	0.4483
4	22.89	2.41	-1.88	-0.33	59.37	-3.04	1.3574	0.5629	0.4371	0.0087	0.4400
5	30.57	3.12	-1.86	-0.09	57.27	-1.48	1.3171	0.5177	0.4823	0.0075	0.4327
6	38.79	3.88	-1.86	0.03	54.98	0.24	1.2812	0.4684	0.5316	0.0100	0.4048
7	47.68	4.76	-1.89	0.13	52.36	2.12	1.2434	0.4156	0.5844	0.0142	0.3658
8	57.49	5.72	-1.92	0.17	49.35	4.14	1.2109	0.3579	0.6421	0.0259	0.2718
9	68.58	6.76	-1.97	-0.03	45.76	6.44	1.1438	0.2947	0.7053	0.0412	0.2730
10	81.62	7.12	-2.13	-0.37	41.99	9.24	1.0348	0.2296	0.7704	0.0400	0.2540
11	98.06	6.15	-2.57	-1.66	37.53	13.26	0.8730	0.1548	0.7730	0.0542	0.2870

1

** values of parameters on streamlines at station, 9, which is the outlet of rotor number, 1 **

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.756	1.778												
1	9.661	1.793	525.38	530.08	460.98	702.48	0.6001	41.01	-7.63	0.059	24.679	618.54	19.412	579.29
2	9.288	1.852	535.09	537.32	438.42	693.49	0.5961	39.21	-5.22	0.042	24.587	610.08	19.397	571.76
3	8.903	1.887	519.13	520.23	430.07	674.98	0.5818	39.58	-3.73	0.030	24.175	604.67	19.279	568.33
4	8.492	1.943	517.84	518.26	436.02	677.28	0.5853	40.07	-2.30	0.022	24.053	601.86	19.130	565.25
5	8.061	2.012	522.04	522.10	449.18	688.73	0.5968	40.71	-0.87	0.016	24.025	600.04	18.940	562.16
6	7.611	2.105	531.22	531.25	476.79	713.83	0.6199	41.91	0.62	0.010	24.147	600.22	18.693	559.52
7	7.137	2.208	533.53	533.91	504.80	734.77	0.6398	43.39	2.16	0.002	24.124	599.64	18.377	556.49
8	6.628	2.331	537.45	538.65	542.54	764.52	0.6678	45.21	3.83	-0.006	24.132	599.49	17.956	552.76
9	6.075	2.477	541.12	543.82	583.81	797.85	0.7001	47.03	5.70	-0.015	24.025	598.39	17.380	547.47
10	5.456	2.609	546.02	551.45	642.44	846.65	0.7478	49.36	8.04	-0.026	23.912	597.47	16.562	540.07
11	4.728	2.703	554.54	565.66	737.20	929.22	0.8298	52.50	11.38	-0.042	23.832	597.02	15.232	527.79
hub	4.664	2.712												

streamline no.	r/rtip	rel.flow angle (deg)	rel. tang.vel. (ft/sec)	rel. vel. (ft/sec)	rel.mach number	wheel speed (ft/sec)	flow coef.	head coef.	ideal head coef.	adiab. eff.	diffusion factor	loss coef.	shock loss coef.	element solidity
tip	1.0000													
1	0.9902	59.26	891.51	1037.20	0.8860	1352.49	0.3740	0.2660	0.3159	0.8419	0.4271	0.1262	0.0439	1.3046
2	0.9521	58.06	861.97	1015.73	0.8730	1300.39	0.3809	0.2507	0.2889	0.8677	0.4186	0.1012	0.0390	1.3630
3	0.9126	57.49	816.33	968.00	0.8344	1246.40	0.3695	0.2410	0.2716	0.8871	0.4244	0.0859	0.0331	1.4253
4	0.8704	55.46	752.83	913.97	0.7899	1188.84	0.3686	0.2383	0.2627	0.9074	0.4369	0.0721	0.0279	1.4979
5	0.8263	52.46	679.34	856.79	0.7424	1128.52	0.3716	0.2377	0.2569	0.9255	0.4527	0.0603	0.0231	1.5826
6	0.7802	47.94	588.78	793.02	0.6887	1065.57	0.3781	0.2404	0.2574	0.9336	0.4762	0.0576	0.0191	1.6832
7	0.7315	42.80	494.37	727.64	0.6336	999.17	0.3798	0.2399	0.2556	0.9385	0.5001	0.0575	0.0149	1.8065
8	0.6794	35.59	385.43	662.35	0.5786	927.96	0.3826	0.2400	0.2551	0.9409	0.5244	0.0609	0.0118	1.9636
9	0.6227	26.13	266.74	605.71	0.5315	850.54	0.3852	0.2377	0.2516	0.9448	0.5375	0.0638	0.0052	2.1763
10	0.5593	12.42	121.41	564.65	0.4987	763.84	0.3887	0.2353	0.2487	0.9463	0.5286	0.0729	0.0001	2.4929
11	0.4846	-7.58	-75.32	570.66	0.5096	661.88	0.3947	0.2350	0.2472	0.9503	0.4435	0.0859	0.0000	3.0528
hub	0.4780													

streamline no.	press. ratio pct. pass.	temp. ratio	local blade forces radius (in.)	for.axial (lbs/in)	tang. (lbs/in)	-- out. stream. -- dev. angle (deg)	out.blade angle (deg)
1	1.87	1.7265	1.1925	9.7870	20.0553	-11.9990	5.26	54.01
2	9.18	1.6766	1.1762	9.3892	18.5167	-11.2417	4.95	53.11
3	16.75	1.6455	1.1657	8.9791	16.8884	-10.5630	4.66	52.83
4	24.83	1.6372	1.1603	8.5452	15.6417	-10.1490	4.71	50.75
5	33.29	1.6353	1.1568	8.0887	14.4177	-9.9156	4.92	47.53
6	42.12	1.6436	1.1572	7.6063	13.1753	-9.9002	5.49	42.45
7	51.43	1.6420	1.1560	7.0902	11.6547	-9.7158	6.18	36.62
8	61.42	1.6426	1.1558	6.5283	9.9691	-9.4993	7.25	28.33
9	72.28	1.6353	1.1536	5.9040	8.0061	-9.0478	8.61	17.52
10	84.44	1.6278	1.1519	5.1852	5.6451	-8.4096	10.49	1.92
11	98.74	1.6265	1.1510	4.3056	2.6711	-8.6788	11.84	-19.42

1

** values of parameters on streamlines at station, 10, which is an annulus **

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.630	3.000												
1	9.575	3.003	561.33	561.86	465.12	729.40	0.6251	39.62	-2.50	0.034	24.669	617.67	19.024	575.32
2	9.226	3.025	574.95	575.30	441.38	725.11	0.6253	37.50	-2.01	0.029	24.580	609.83	18.950	567.91
3	8.862	3.047	558.21	558.38	432.04	706.01	0.6103	37.73	-1.40	0.024	24.175	604.67	18.859	564.90
4	8.474	3.071	555.03	555.06	436.90	706.38	0.6121	38.21	-0.61	0.018	24.055	601.93	18.738	562.09
5	8.067	3.096	556.48	556.49	448.82	714.92	0.6210	38.89	0.29	0.013	24.027	600.14	18.584	559.30
6	7.640	3.122	562.34	562.47	475.01	736.21	0.6407	40.18	1.23	0.008	24.148	600.32	18.381	557.01
7	7.186	3.150	562.11	562.55	501.35	753.53	0.6573	41.71	2.27	0.002	24.125	599.73	18.112	554.35
8	6.697	3.180	563.16	564.20	537.02	778.92	0.6814	43.59	3.48	-0.004	24.133	599.59	17.749	551.07
9	6.160	3.213	563.37	565.47	575.77	807.01	0.7088	45.52	4.93	-0.011	24.026	598.49	17.247	546.38
10	5.559	3.250	565.13	569.14	630.52	849.40	0.7504	47.93	6.80	-0.022	23.914	597.57	16.522	539.79
11	4.860	3.293	567.77	577.54	717.09	920.74	0.8212	51.15	10.55	-0.041	23.834	597.13	15.367	529.16
hub	4.750	3.300												

1

** values of parameters on streamlines at station, 11, which is the inlet of stator number, 1, of stage number, 1 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.599	4.118												
1	9.538	4.117	578.27	578.35	466.89	743.29	0.6382	38.91	-0.97	0.013	24.660	616.95	18.814	572.96
2	9.197	4.115	594.55	594.57	442.77	741.32	0.6404	36.67	-0.45	0.017	24.573	609.60	18.713	565.78
3	8.843	4.119	579.89	579.89	433.00	723.72	0.6267	36.75	0.03	0.017	24.174	604.67	18.614	562.86
4	8.466	4.123	576.92	576.95	437.34	723.97	0.6284	37.16	0.54	0.014	24.056	601.99	18.497	560.13
5	8.071	4.128	578.13	578.23	448.64	731.87	0.6367	37.81	1.08	0.010	24.028	600.21	18.350	557.42
6	7.655	4.135	583.61	583.87	474.04	752.08	0.6556	39.07	1.70	0.006	24.150	600.40	18.157	555.19
7	7.215	4.143	583.06	583.59	499.34	768.06	0.6710	40.55	2.45	0.002	24.126	599.81	17.904	552.65
8	6.740	4.151	583.41	584.40	533.53	791.32	0.6931	42.39	3.35	-0.001	24.134	599.67	17.568	549.59
9	6.221	4.161	582.38	584.13	570.14	816.26	0.7177	44.31	4.44	-0.006	24.028	598.58	17.111	545.26
10	5.640	4.173	582.71	585.61	621.47	853.91	0.7548	46.70	5.71	-0.015	23.916	597.66	16.456	539.26
11	4.969	4.180	589.30	594.04	701.35	919.12	0.8196	49.74	7.25	-0.039	23.836	597.22	15.395	529.49
hub	4.847	4.181												

streamline no.	r/rtip	flow coef.	rel.flow angle (deg)
tip	1.0000		
1	0.9937	0.4116	56.34
2	0.9581	0.4232	54.86
3	0.9212	0.4128	54.23
4	0.8820	0.4107	52.35
5	0.8408	0.4115	49.68
6	0.7975	0.4154	45.67
7	0.7516	0.4150	41.19
8	0.7022	0.4153	35.06
9	0.6481	0.4146	27.24
10	0.5876	0.4148	16.02
11	0.5177	0.4195	-0.54
hub	0.5050		

	------ inlet streamline -------				---------- streamline element ----------					
streamline no.	pct. pass.	inc. angle (deg)	ref. inc. (deg)	s.s.inc. angle (deg)	in.blade angle (deg)	element slope (deg)	mach no. at shock location	sh.loc. as fract of s.s.	cov.chan. as fract of s.s.	min.chk. area margin	min.chk. pt.loc.in cov.chan.
1	1.28	2.18	-2.25	-3.99	36.73	-0.30	0.8593	0.3342	0.5159	0.1942	0.0000
2	8.45	3.13	-2.08	-3.04	33.54	0.27	0.8318	0.3097	0.5727	0.1761	0.0000
3	15.92	3.34	-1.96	-2.80	33.41	0.67	0.8057	0.3026	0.5989	0.1905	0.0000
4	23.84	3.32	-1.88	-2.78	33.84	1.00	0.8033	0.2967	0.6153	0.1888	0.0000

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

5	32.17	3.27	-1.86	-2.78	34.54	1.35	0.8106	0.2911	0.6293	0.1799	0.0000
6	40.90	3.32	-1.86	-2.68	35.76	1.82	0.8359	0.2872	0.6393	0.1656	0.0000
7	50.17	3.36	-1.89	-2.57	37.19	2.45	0.8573	0.2824	0.6493	0.1573	0.0000
8	60.16	3.55	-1.92	-2.31	38.84	3.21	0.8898	0.2759	0.6583	0.1495	0.0000
9	71.09	3.56	-1.97	-2.23	40.75	4.10	0.9226	0.2674	0.6698	0.1409	0.0000
10	83.31	3.30	-2.13	-2.38	43.40	4.99	0.9723	0.2568	0.6777	0.1300	0.0000
11	97.43	2.86	-2.57	-2.67	46.87	5.41	1.0608	0.2402	0.6804	0.1134	0.0000

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** values of parameters on streamlines at station, 12, which is the outlet of stator number, 1, of stage number, 1 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.596	6.353												
1	9.526	6.352	601.43	601.49	-44.71	603.15	0.5131	-4.25	0.82	0.016	24.147	613.29	20.231	584.35
2	9.208	6.347	594.78	594.84	-23.36	595.30	0.5081	-2.25	0.79	0.002	24.094	608.37	20.252	580.15
3	8.869	6.345	567.57	567.62	-10.07	567.71	0.4851	-1.02	0.80	-0.006	23.731	604.58	20.250	578.90
4	8.505	6.344	559.73	559.80	-4.88	559.82	0.4790	-0.50	0.93	-0.008	23.623	602.26	20.235	577.28
5	8.123	6.344	558.40	558.52	-1.26	558.53	0.4785	-0.13	1.22	-0.008	23.595	600.63	20.218	575.76
6	7.726	6.343	567.44	567.68	0.98	567.68	0.4866	0.10	1.64	-0.007	23.697	600.81	20.201	575.11
7	7.309	6.343	562.91	563.32	2.63	563.33	0.4829	0.27	2.20	-0.007	23.624	600.24	20.185	574.93
8	6.863	6.344	558.80	559.51	1.23	559.51	0.4796	0.13	2.87	-0.007	23.555	600.09	20.169	575.13
9	6.377	6.345	543.60	544.68	-0.23	544.68	0.4668	-0.02	3.61	-0.008	23.347	599.04	20.152	575.38
10	5.830	6.347	518.00	519.45	-9.19	519.53	0.4447	-1.01	4.28	-0.008	23.012	598.15	20.129	576.62
11	5.175	6.355	468.52	469.96	-31.38	471.01	0.4021	-3.82	4.49	-0.004	22.438	597.72	20.107	580.03
hub	5.043	6.356												

streamline no.	r/rtip	flow coef.	head coef.	ideal head coef.	stator po.ratio	stage po.ratio	stage ad.eff.	diffusion factor	stator loss coef.	shock loss coef.	element solidity
tip	1.0000										
1	0.9927	0.4281	0.2546	0.3159	0.9792	1.6893	0.8059	0.4555	0.0876	0.0000	1.2900
2	0.9595	0.4234	0.2401	0.2889	0.9805	1.6429	0.8312	0.4322	0.0818	0.0000	1.3361
3	0.9241	0.4040	0.2314	0.2716	0.9817	1.6153	0.8519	0.4357	0.0797	0.0000	1.3885
4	0.8862	0.3984	0.2290	0.2627	0.9820	1.6079	0.8720	0.4370	0.0780	0.0000	1.4493
5	0.8464	0.3975	0.2284	0.2569	0.9820	1.6060	0.8893	0.4385	0.0763	0.0000	1.5191
6	0.8050	0.4039	0.2306	0.2574	0.9813	1.6130	0.8959	0.4409	0.0755	0.0000	1.5997
7	0.7616	0.4007	0.2290	0.2556	0.9792	1.6080	0.8962	0.4561	0.0808	0.0000	1.6947
8	0.7152	0.3978	0.2276	0.2551	0.9760	1.6033	0.8920	0.4770	0.0882	0.0000	1.8104
9	0.6646	0.3870	0.2230	0.2516	0.9716	1.5891	0.8862	0.5091	0.0985	0.0000	1.9565
10	0.6075	0.3687	0.2156	0.2487	0.9622	1.5663	0.8670	0.5605	0.1213	0.0000	2.1509
11	0.5393	0.3335	0.2041	0.2472	0.9414	1.5314	0.8256	0.6484	0.1656	0.0007	2.4327
hub	0.5256										

streamline no.	local blade forces pct. pass.	radius (in.)	for.axial (lbs/in)	tang. (lbs/in)	-- out. stream. -- dev. angle (deg)	out.blade angle (deg)
1	1.54	9.5323	2.9684	10.3937	11.93	-16.18
2	8.54	9.2025	2.6194	9.2374	10.21	-12.46
3	15.99	8.8556	2.4400	8.2889	9.58	-10.60
4	23.98	8.4854	2.4109	7.8124	9.24	-9.74
5	32.37	8.0966	2.4442	7.5881	8.99	-9.12
6	41.09	7.6904	2.6172	7.6009	8.90	-8.81
7	50.24	7.2619	2.7153	7.4989	8.87	-8.60
8	60.03	6.8016	2.8632	7.4237	8.91	-8.79
9	70.70	6.2992	2.9580	7.1902	8.96	-8.98
10	82.73	5.7349	3.0462	6.9337	9.27	-10.28
11	97.10	5.0724	3.0197	7.4102	10.39	-14.21

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TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

** values of parameters on streamlines at station, 13, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.603	7.340												
1	9.534	7.340	578.89	579.01	-44.68	580.73	0.4933	-4.41	-1.16	-0.081	24.139	612.98	20.491	586.15
2	9.210	7.340	587.79	587.92	-23.35	588.39	0.5020	-2.27	-1.20	-0.065	24.087	608.24	20.328	580.67
3	8.871	7.340	571.74	571.82	-10.06	571.91	0.4888	-1.01	-0.92	-0.047	23.729	604.56	20.199	578.49
4	8.511	7.340	571.15	571.17	-4.87	571.19	0.4891	-0.49	-0.43	-0.033	23.622	602.28	20.104	576.27
5	8.137	7.340	574.28	574.28	-1.26	574.28	0.4925	-0.13	0.21	-0.022	23.595	600.67	20.036	574.37
6	7.749	7.340	585.52	585.60	0.98	585.60	0.5026	0.10	0.94	-0.013	23.697	600.85	19.990	573.50
7	7.344	7.340	581.85	582.12	2.62	582.13	0.4997	0.26	1.75	-0.006	23.624	600.28	19.966	573.25
8	6.911	7.340	576.59	577.21	1.22	577.21	0.4954	0.12	2.66	0.002	23.555	600.13	19.965	573.56
9	6.439	7.340	557.94	559.08	-0.23	559.08	0.4796	-0.02	3.65	0.011	23.348	599.09	19.992	574.15
10	5.906	7.340	524.75	526.57	-9.08	526.65	0.4510	-0.99	4.77	0.026	23.017	598.20	20.059	576.08
11	5.259	7.340	461.30	463.66	-30.88	464.68	0.3965	-3.81	5.78	0.047	22.453	597.77	20.180	580.55
hub	5.131	7.340												

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** values of parameters on streamlines at station, 14, which is the inlet of rotor number, 2 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.499	8.707												
1	9.430	8.703	645.23	649.68	-45.17	651.25	0.5565	-3.98	-6.71	-0.041	24.128	612.56	19.609	578.79
2	9.128	8.686	650.44	653.21	-23.57	653.63	0.5608	-2.07	-5.27	-0.027	24.077	608.07	19.506	574.02
3	8.812	8.664	632.72	634.17	-10.13	634.25	0.5448	-0.92	-3.87	-0.020	23.727	604.53	19.443	572.45
4	8.477	8.638	628.51	629.06	-4.89	629.08	0.5412	-0.45	-2.41	-0.014	23.622	602.31	19.407	570.74
5	8.127	8.609	627.24	627.33	-1.26	627.33	0.5403	-0.12	-0.96	-0.007	23.594	600.73	19.396	569.32
6	7.762	8.578	633.21	633.23	0.98	633.23	0.5456	0.09	0.41	-0.001	23.696	600.90	19.407	568.90
7	7.379	8.543	625.39	625.68	2.60	625.68	0.5390	0.24	1.73	0.003	23.624	600.33	19.438	569.09
8	6.969	8.504	615.96	616.88	1.21	616.88	0.5311	0.11	3.13	0.009	23.555	600.19	19.490	569.83
9	6.521	8.462	593.50	595.54	-0.22	595.54	0.5123	-0.02	4.74	0.016	23.351	599.15	19.571	570.85
10	6.014	8.412	556.00	559.96	-8.91	560.03	0.4808	-0.91	6.81	0.028	23.024	598.27	19.699	573.25
11	5.397	8.337	483.51	490.54	-30.09	491.46	0.4200	-3.51	9.71	0.066	22.469	597.84	19.936	578.58
hub	5.265	8.321												

streamline no.	r/rtip	rel.flow angle (deg)	rel. tang.vel. (ft/sec)	rel. vel. (ft/sec)	rel.mach number	wheel speed (ft/sec)	flow coef.
tip	1.0000					1329.87	
1	0.9927	64.55	1365.35	1512.04	1.2921	1320.18	0.4852
2	0.9610	63.33	1301.51	1456.23	1.2493	1277.95	0.4891
3	0.9277	62.98	1243.79	1396.14	1.1993	1233.66	0.4758
4	0.8924	62.17	1191.64	1347.49	1.1592	1186.75	0.4726
5	0.8555	61.15	1138.97	1300.31	1.1199	1137.71	0.4717
6	0.8171	59.75	1085.70	1256.87	1.0829	1086.68	0.4761
7	0.7768	58.73	1030.45	1205.53	1.0385	1033.06	0.4703
8	0.7336	57.66	974.39	1153.25	0.9928	975.60	0.4632
9	0.6865	56.89	913.13	1090.17	0.9377	912.90	0.4463
10	0.6331	56.65	850.81	1018.54	0.8744	841.89	0.4181
11	0.5682	58.02	785.70	926.26	0.7917	755.61	0.3636
hub	0.5543						

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

streamline no.	pct. pass.	inlet streamline: inc. angle (deg)	ref. inc. (deg)	s.s.inc. angle (deg)	in.blade angle (deg)	element slope (deg)	mach no. at shock location	sh.loc. as fract of s.s.	cov.chan. as fract of s.s.	min.chk. area margin	min.chk. pt.loc.in cov.chan.
1	1.63	2.52	-2.25	-0.02	62.03	-6.58	1.4015	0.6639	0.3361	0.0575	0.5213
2	8.76	2.24	-2.08	-0.26	61.11	-5.08	1.3534	0.6378	0.3622	0.0348	0.4299
3	16.23	2.96	-1.96	0.36	60.02	-3.75	1.3227	0.6087	0.3913	0.0494	0.3074
4	24.14	3.43	-1.88	0.58	58.74	-2.32	1.2989	0.5766	0.4234	0.0528	0.1937
5	32.42	3.85	-1.86	0.64	57.31	-0.88	1.2774	0.5420	0.4580	0.0543	0.1577
6	41.03	3.98	-1.86	0.31	55.77	0.48	1.2549	0.5055	0.4945	0.0457	0.1061
7	50.07	4.53	-1.89	0.34	54.20	1.79	1.2386	0.4673	0.5327	0.0493	0.0727
8	59.76	5.02	-1.92	0.30	52.64	3.23	1.2242	0.4270	0.5730	0.0530	0.0000
9	70.34	5.70	-1.97	0.49	51.19	4.93	1.1806	0.3851	0.6149	0.0672	0.0000
10	82.32	6.20	-2.13	0.68	50.45	7.22	1.1325	0.3420	0.6580	0.0914	0.0000
11	96.88	5.22	-2.57	-0.09	52.80	10.98	1.0776	0.2976	0.6977	0.1490	0.0000

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** values of parameters on streamlines at station, 15, which is the outlet of rotor number, 2 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.374	9.729												
1	9.311	9.733	546.69	548.82	365.30	659.28	0.5283	33.65	-5.04	0.084	36.433	696.74	30.242	662.79
2	9.034	9.750	526.28	527.50	384.77	652.92	0.5258	36.11	-3.91	0.060	36.354	689.37	30.226	656.01
3	8.739	9.774	511.70	512.36	419.50	662.19	0.5344	39.31	-2.90	0.043	36.501	687.30	30.167	652.97
4	8.430	9.801	506.62	506.86	439.02	670.56	0.5425	40.90	-1.76	0.028	36.603	684.84	30.079	649.61
5	8.108	9.832	506.47	506.50	454.57	680.57	0.5521	41.91	-0.59	0.014	36.593	682.27	29.866	645.96
6	7.773	9.867	507.57	507.60	470.49	692.11	0.5623	42.83	0.58	0.004	36.629	681.42	29.674	643.86
7	7.422	9.908	506.49	506.72	495.05	708.41	0.5765	44.33	1.75	-0.004	36.594	680.99	29.336	641.62
8	7.050	9.954	506.18	506.89	522.76	728.16	0.5934	45.88	3.04	-0.012	36.616	681.33	28.981	639.74
9	6.654	10.007	502.58	504.16	557.68	751.79	0.6140	47.89	4.54	-0.020	36.542	681.08	28.462	636.72
10	6.224	10.069	497.03	500.16	605.59	785.43	0.6427	50.45	6.41	-0.036	36.525	682.62	27.800	634.20
11	5.747	10.143	494.10	500.63	698.32	859.23	0.7042	54.36	9.27	-0.073	37.107	689.92	26.798	632.00
hub	5.647	10.158												

streamline no.	r/rtip	rel.flow angle (deg)	rel. tang.vel. (ft/sec)	rel. vel. (ft/sec)	rel.mach number	wheel speed (ft/sec)	flow coef.	head coef.	ideal head coef.	adiab. eff.	diffusion factor	loss coef.	shock loss coef.	element solidity
tip	1.0000													
1	0.9933	59.67	938.24	1086.97	0.8711	1303.54	0.4111	0.2593	0.3030	0.8557	0.3844	0.0981	0.0343	1.3075
2	0.9637	59.06	879.93	1025.94	0.8261	1264.70	0.3957	0.2573	0.2922	0.8808	0.3988	0.0825	0.0279	1.3503
3	0.9323	57.49	803.98	953.36	0.7694	1223.48	0.3848	0.2681	0.2973	0.9020	0.4269	0.0728	0.0244	1.3968
4	0.8992	55.63	741.13	897.88	0.7264	1180.15	0.3810	0.2719	0.2962	0.9179	0.4470	0.0638	0.0217	1.4496
5	0.8649	53.34	680.50	848.30	0.6881	1135.07	0.3808	0.2718	0.2926	0.9290	0.4636	0.0572	0.0193	1.5093
6	0.8292	50.59	617.69	799.50	0.6495	1088.18	0.3817	0.2697	0.2889	0.9336	0.4824	0.0554	0.0168	1.5771
7	0.7917	47.03	543.99	743.43	0.6050	1039.03	0.3809	0.2708	0.2893	0.9361	0.5070	0.0566	0.0153	1.6555
8	0.7521	42.49	464.30	687.39	0.5601	987.06	0.3806	0.2731	0.2911	0.9380	0.5340	0.0588	0.0141	1.7485
9	0.7098	36.56	373.90	627.67	0.5126	931.58	0.3779	0.2770	0.2939	0.9425	0.5630	0.0598	0.0092	1.8623
10	0.6639	27.98	265.71	566.36	0.4634	871.30	0.3737	0.2855	0.3026	0.9436	0.5966	0.0671	0.0047	2.0094
11	0.6131	11.99	106.31	511.80	0.4195	804.63	0.3715	0.3119	0.3306	0.9435	0.6294	0.0852	0.0013	2.2239
hub	0.6024													

streamline no.	pct. pass.	press. ratio	temp. ratio	local blade forces: radius (in.)	for.axial (lbs/in)	tang. (lbs/in)	-- out. stream. -- dev. angle (deg)	out.blade angle (deg)
1	1.69	1.5100	1.1374	9.3705	14.4687	-8.4990	3.06	56.61
2	9.14	1.5099	1.1337	9.0809	13.6194	-8.2358	3.43	55.62
3	17.04	1.5384	1.1369	8.7755	13.2667	-8.2137	3.56	53.93
4	25.34	1.5495	1.1370	8.4532	12.7130	-8.0875	3.72	51.91

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

5	33.98	1.5509	1.1357	8.1171	11.9473	-7.9722	3.91	49.43
6	42.97	1.5458	1.1340	7.7674	11.0785	-7.8593	4.35	46.24
7	52.39	1.5490	1.1343	7.4003	10.2062	-7.7991	4.88	42.15
8	62.35	1.5545	1.1352	7.0095	9.3319	-7.7048	5.62	36.87
9	72.98	1.5649	1.1367	6.5875	8.3685	-7.5292	6.65	29.91
10	84.53	1.5864	1.1410	6.1186	7.3275	-7.3006	8.51	19.47
11	97.31	1.6515	1.1540	5.5723	6.1037	-7.9941	12.86	-0.87

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** values of parameters on streamlines at station, 16, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.315	11.010												
1	9.257	11.010	566.59	566.74	367.43	675.42	0.5422	32.96	-1.31	0.010	36.434	695.88	29.950	660.23
2	8.989	11.010	550.48	550.57	386.69	672.80	0.5426	35.08	-1.04	0.012	36.356	689.26	29.875	653.83
3	8.706	11.010	539.61	539.65	421.10	684.50	0.5534	37.97	-0.71	0.012	36.502	687.28	29.765	650.58
4	8.411	11.010	538.76	538.77	439.99	695.60	0.5638	39.24	-0.32	0.010	36.603	684.88	29.621	646.96
5	8.105	11.010	536.59	536.59	454.73	703.35	0.5715	40.28	0.15	0.006	36.593	682.37	29.444	643.58
6	7.786	11.010	540.32	540.36	469.68	715.95	0.5827	41.00	0.73	0.001	36.629	681.54	29.227	641.33
7	7.452	11.010	536.05	536.22	493.02	728.42	0.5937	42.60	1.42	-0.005	36.594	681.10	28.956	639.47
8	7.099	11.010	537.26	537.66	519.22	747.44	0.6100	44.00	2.22	-0.012	36.616	681.45	28.609	637.61
9	6.721	11.010	531.77	532.59	552.13	767.13	0.6273	46.03	3.18	-0.021	36.542	681.19	28.161	635.00
10	6.311	11.010	526.58	528.09	597.24	797.23	0.6530	48.52	4.34	-0.031	36.526	682.71	27.563	632.81
11	5.857	11.010	522.61	525.24	685.29	863.42	0.7081	52.53	5.74	-0.047	37.096	689.69	26.698	631.20
hub	5.763	11.010												

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** values of parameters on streamlines at station, 17, which is the inlet of stator number, 1, of stage number, 2 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.297	11.859												
1	9.240	11.860	579.48	579.51	368.11	686.54	0.5518	32.42	-0.62	0.025	36.435	695.39	29.746	658.55
2	8.976	11.864	562.57	562.60	387.24	682.99	0.5513	34.54	-0.59	0.012	36.358	689.19	29.692	652.68
3	8.698	11.868	552.31	552.32	421.49	694.78	0.5621	37.35	-0.40	0.005	36.503	687.26	29.577	649.45
4	8.409	11.871	552.52	552.52	440.13	706.39	0.5731	38.54	-0.10	0.002	36.603	684.90	29.420	645.79
5	8.109	11.873	551.43	551.44	454.52	714.61	0.5812	39.50	0.27	0.000	36.594	682.44	29.233	642.39
6	7.797	11.877	555.91	555.94	469.01	727.35	0.5925	40.15	0.67	-0.003	36.630	681.61	29.010	640.11
7	7.472	11.882	552.40	552.50	491.72	739.62	0.6034	41.67	1.11	-0.006	36.594	681.18	28.741	638.25
8	7.128	11.887	553.94	554.16	517.06	757.92	0.6191	43.02	1.61	-0.011	36.617	681.53	28.405	636.44
9	6.763	11.893	548.73	549.13	548.74	776.31	0.6353	44.98	2.18	-0.017	36.543	681.27	27.980	633.96
10	6.367	11.904	543.94	544.60	591.98	804.38	0.6593	47.39	2.82	-0.026	36.526	682.75	27.419	631.95
11	5.932	11.929	540.01	541.05	676.57	866.31	0.7108	51.35	3.55	-0.035	37.084	689.43	26.625	630.54
hub	5.842	11.934												

streamline no.	r/rtip	flow coef.	rel.flow angle (deg)
tip	1.0000		
1	0.9939	0.4357	57.95
2	0.9655	0.4230	57.09
3	0.9356	0.4153	55.25
4	0.9044	0.4155	53.14
5	0.8722	0.4147	50.99

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

6	0.8387	0.4180	48.24
7	0.8037	0.4154	45.10
8	0.7667	0.4165	40.95
9	0.7274	0.4126	35.94
10	0.6848	0.4090	28.80
11	0.6381	0.4061	15.88
hub	0.6284		

	------ inlet streamline -------				------------------- streamline element -------------------					
streamline no.	inc. pct. pass.	ref. inc. angle (deg)	s.s.inc. angle (deg)	in.blade angle (deg)	element slope (deg)	mach no. at shock location	sh.loc. as fract of s.s.	cov.chan. as fract of s.s.	min.chk. area margin	min.chk. pt.loc.in cov.chan.
1	1.65	-2.70	-2.25	-8.46	35.13	0.23	0.6870	0.3285	0.5242	0.2358	0.0000
2	9.29	0.01	-2.08	-5.74	34.53	-0.09	0.6978	0.3218	0.5579	0.2624	0.0000
3	17.34	2.76	-1.96	-2.97	34.69	-0.10	0.7296	0.3177	0.5811	0.2804	0.0000
4	25.71	3.82	-1.88	-1.87	34.72	0.10	0.7484	0.3120	0.5978	0.2781	0.0000
5	34.40	4.31	-1.86	-1.33	35.19	0.37	0.7611	0.3072	0.6094	0.2766	0.0000
6	43.40	4.03	-1.86	-1.56	36.13	0.65	0.7740	0.3042	0.6168	0.2621	0.0000
7	52.82	4.33	-1.89	-1.19	37.34	0.94	0.7934	0.3017	0.6231	0.2623	0.0000
8	62.77	4.23	-1.92	-1.22	38.79	1.27	0.8167	0.2987	0.6278	0.2523	0.0000
9	73.35	4.47	-1.97	-0.88	40.51	1.61	0.8452	0.2952	0.6326	0.2536	0.0000
10	84.81	3.39	-2.13	-1.84	44.00	1.95	0.8832	0.2964	0.6253	0.2388	0.0000
11	97.39	-0.94	-2.57	-5.93	52.29	2.39	0.9593	0.3093	0.5909	0.1788	0.0000

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** values of parameters on streamlines at station, 18, which is the outlet of stator number, 1, of stage number, 2 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.303	13.588												
1	9.247	13.588	528.09	528.10	-40.88	529.68	0.4219	-4.43	0.31	-0.008	35.858	693.15	31.810	671.25
2	8.973	13.586	526.54	526.55	-21.33	526.98	0.4210	-2.32	0.22	0.004	35.838	688.79	31.808	667.09
3	8.695	13.584	533.59	533.59	-6.96	533.64	0.4270	-0.75	0.25	0.008	35.975	687.11	31.821	664.84
4	8.412	13.583	536.76	536.77	-0.47	536.77	0.4303	-0.05	0.39	0.008	36.065	684.99	31.841	662.45
5	8.120	13.583	533.82	533.84	2.59	533.85	0.4285	0.28	0.58	0.007	36.052	682.78	31.860	660.48
6	7.817	13.582	533.60	533.65	3.55	533.66	0.4286	0.38	0.78	0.005	36.071	682.01	31.876	659.71
7	7.500	13.582	527.22	527.30	4.77	527.32	0.4235	0.52	0.99	0.004	35.982	681.58	31.889	659.81
8	7.166	13.583	523.79	523.91	3.63	523.92	0.4206	0.40	1.21	0.003	35.934	681.93	31.898	660.44
9	6.810	13.583	512.27	512.43	2.46	512.44	0.4111	0.27	1.45	0.002	35.755	681.67	31.905	661.12
10	6.424	13.585	498.12	498.34	-5.41	498.37	0.3992	-0.62	1.69	0.002	35.530	682.99	31.910	663.56
11	6.002	13.593	495.60	495.93	-28.35	496.74	0.3963	-3.27	2.11	0.003	35.480	688.26	31.915	668.98
hub	5.915	13.595												

streamline no.	r/rtip	flow coef.	head coef.	ideal head coef.	stator po.ratio	stage po.ratio	stage ad.eff.	diffusion factor	stator loss coef.	shock loss coef.	element solidity
tip	1.0000										
1	0.9940	0.3971	0.2487	0.3030	0.9842	1.4862	0.8209	0.4632	0.0862	0.0000	1.2688
2	0.9646	0.3959	0.2479	0.2922	0.9857	1.4885	0.8485	0.4573	0.0779	0.0000	1.3070
3	0.9347	0.4012	0.2586	0.2973	0.9855	1.5162	0.8698	0.4606	0.0762	0.0000	1.3489
4	0.9042	0.4036	0.2622	0.2962	0.9853	1.5268	0.8851	0.4637	0.0749	0.0000	1.3948
5	0.8728	0.4014	0.2620	0.2926	0.9852	1.5280	0.8956	0.4715	0.0737	0.0000	1.4457
6	0.8402	0.4012	0.2596	0.2889	0.9848	1.5222	0.8987	0.4790	0.0733	0.0000	1.5026
7	0.8062	0.3964	0.2598	0.2893	0.9833	1.5231	0.8979	0.4967	0.0780	0.0000	1.5672
8	0.7703	0.3939	0.2607	0.2911	0.9813	1.5255	0.8957	0.5145	0.0832	0.0000	1.6417
9	0.7321	0.3852	0.2627	0.2939	0.9784	1.5312	0.8940	0.5427	0.0920	0.0000	1.7292
10	0.6905	0.3746	0.2674	0.3026	0.9727	1.5432	0.8837	0.5819	0.1094	0.0000	1.8353
11	0.6452	0.3727	0.2823	0.3306	0.9567	1.5791	0.8539	0.6322	0.1534	0.0000	1.9679
hub	0.6358										

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

streamline no.	pct. pass.	local blade forces radius (in.)	for.axial (lbs/in)	tang. (lbs/in)	-- out. stream. -- dev. angle (deg)	out.blade angle (deg)
1	1.64	9.2436	1.8168	8.2495	11.17	-15.60
2	9.72	8.9747	2.1263	8.1033	10.45	-12.76
3	17.94	8.6964	2.5607	8.2336	10.12	-10.87
4	26.31	8.4100	2.7518	8.2094	9.83	-9.88
5	34.92	8.1140	2.8679	8.1327	9.67	-9.39
6	43.87	7.8070	2.9531	8.0424	9.57	-9.19
7	53.22	7.4858	3.0974	8.0104	9.61	-9.10
8	63.08	7.1470	3.2468	7.9707	9.70	-9.30
9	73.57	6.7864	3.4273	7.8970	9.88	-9.61
10	84.97	6.3953	3.6452	7.9247	10.56	-11.18
11	97.44	5.9668	4.0972	8.9249	12.72	-16.00

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** values of parameters on streamlines at station, 19, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.303	14.440												
1	9.248	14.440	532.50	532.50	-40.87	534.06	0.4256	-4.39	-0.10	-0.004	35.858	692.92	31.745	670.65
2	8.977	14.440	531.03	531.03	-21.32	531.46	0.4247	-2.30	0.20	-0.002	35.839	688.73	31.742	666.66
3	8.701	14.440	538.74	538.76	-6.96	538.81	0.4313	-0.74	0.45	0.002	35.975	687.08	31.744	664.38
4	8.420	14.440	542.48	542.52	-0.47	542.52	0.4350	-0.05	0.67	0.005	36.064	685.00	31.754	661.97
5	8.131	14.440	539.67	539.74	2.59	539.74	0.4334	0.27	0.88	0.007	36.051	682.82	31.771	660.02
6	7.831	14.440	539.07	539.17	3.54	539.18	0.4332	0.38	1.09	0.009	36.070	682.05	31.792	659.30
7	7.517	14.440	532.02	532.16	4.76	532.18	0.4275	0.51	1.28	0.009	35.981	681.63	31.816	659.46
8	7.186	14.440	527.71	527.88	3.62	527.89	0.4238	0.39	1.45	0.009	35.933	681.98	31.840	660.17
9	6.833	14.440	515.43	515.63	2.45	515.63	0.4138	0.27	1.60	0.006	35.755	681.72	31.860	660.91
10	6.450	14.440	501.21	501.44	-5.39	501.47	0.4017	-0.62	1.72	0.000	35.532	683.02	31.869	663.35
11	6.033	14.440	500.57	500.83	-28.21	501.63	0.4004	-3.22	1.85	-0.012	35.482	688.12	31.848	668.46
hub	5.947	14.440												

** values of parameters on streamlines at station, 20, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.298	15.700												
1	9.243	15.705	558.96	558.98	-40.90	560.47	0.4475	-4.18	-0.40	0.006	35.858	692.59	31.346	668.05
2	8.982	15.729	556.35	556.37	-21.31	556.77	0.4457	-2.19	0.39	0.017	35.839	688.64	31.362	664.41
3	8.716	15.753	561.17	561.28	-6.95	561.32	0.4499	-0.71	1.09	0.024	35.974	687.03	31.399	662.39
4	8.445	15.778	561.45	561.70	-0.47	561.70	0.4509	-0.05	1.69	0.029	36.063	685.00	31.458	660.32
5	8.165	15.803	554.93	555.35	2.58	555.35	0.4463	0.27	2.21	0.033	36.049	682.88	31.531	658.74
6	7.873	15.830	550.10	550.69	3.53	550.70	0.4427	0.37	2.65	0.036	36.069	682.13	31.615	658.39
7	7.566	15.858	538.46	539.20	4.73	539.22	0.4333	0.50	3.00	0.038	35.980	681.71	31.710	658.95
8	7.241	15.887	538.88	539.74	3.69	539.75	0.4353	0.39	3.25	0.040	35.933	682.05	31.812	660.00

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

9	6.892	15.919	510.52	511.41	2.43	511.42	0.4103	0.27	3.38	0.042	35.756	681.80	31.922	661.33
10	6.508	15.954	488.67	489.48	-5.34	489.51	0.3918	-0.62	3.31	0.043	35.535	683.06	32.038	664.32
11	6.084	15.992	477.54	478.14	-27.97	478.96	0.3819	-3.35	2.88	0.045	35.486	687.89	32.160	669.97
hub	6.000	16.000												

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** values of parameters on streamlines at station, 21, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.319	17.000												
1	9.266	17.010	626.06	627.58	-40.80	628.91	0.5045	-3.72	3.99	0.109	35.859	692.24	30.246	661.33
2	9.029	17.055	609.03	611.31	-21.20	611.67	0.4914	-1.99	4.94	0.100	35.840	688.55	30.488	659.28
3	8.785	17.102	600.93	603.98	-6.89	604.02	0.4855	-0.65	5.76	0.094	35.974	686.98	30.717	658.44
4	8.532	17.150	590.29	594.07	-0.47	594.07	0.4779	-0.04	6.47	0.089	36.061	685.01	30.941	657.39
5	8.269	17.200	574.52	578.96	2.54	578.97	0.4660	0.25	7.10	0.085	36.048	682.95	31.159	656.70
6	7.993	17.253	561.25	566.32	3.47	566.33	0.4557	0.35	7.67	0.083	36.067	682.20	31.371	657.09
7	7.700	17.309	541.86	547.45	4.65	547.47	0.4401	0.49	8.20	0.082	35.979	681.79	31.584	658.32
8	7.387	17.368	524.67	530.76	3.52	530.77	0.4262	0.38	8.68	0.083	35.931	682.13	31.796	660.08
9	7.049	17.433	498.56	504.97	2.38	504.97	0.4049	0.27	9.14	0.085	35.757	681.88	32.016	661.92
10	6.673	17.504	468.04	474.66	-5.21	474.69	0.3797	-0.63	9.58	0.090	35.538	683.11	32.243	665.48
11	6.250	17.585	446.26	453.23	-27.23	454.05	0.3616	-3.44	10.06	0.102	35.490	687.68	32.489	671.58
hub	6.171	17.600												

** values of parameters on streamlines at station, 22, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.406	17.750												
1	9.355	17.764	639.16	648.41	-40.40	649.67	0.5220	-3.57	9.69	0.135	35.859	692.05	29.892	659.05
2	9.131	17.828	617.82	627.74	-20.96	628.09	0.5052	-1.91	10.20	0.122	35.840	688.49	30.215	657.63
3	8.899	17.894	605.89	616.67	-6.80	616.71	0.4962	-0.63	10.73	0.113	35.973	686.95	30.507	657.19
4	8.658	17.962	591.99	603.61	-0.46	603.61	0.4859	-0.04	11.26	0.107	36.060	685.01	30.784	656.49
5	8.407	18.033	573.39	585.77	2.50	585.77	0.4717	0.24	11.80	0.102	36.047	682.98	31.049	656.12
6	8.143	18.108	557.48	570.69	3.41	570.70	0.4593	0.34	12.35	0.099	36.066	682.25	31.302	656.75
7	7.863	18.187	535.70	549.60	4.55	549.62	0.4419	0.47	12.92	0.096	35.978	681.83	31.551	658.18
8	7.564	18.272	516.34	531.03	3.44	531.04	0.4264	0.37	13.51	0.095	35.931	682.18	31.792	660.11
9	7.240	18.364	488.53	503.80	2.31	503.81	0.4039	0.26	14.15	0.094	35.758	681.92	32.033	662.06
10	6.881	18.465	457.14	472.96	-5.05	472.99	0.3783	-0.61	14.86	0.093	35.541	683.13	32.267	665.64
11	6.480	18.579	436.34	453.25	-26.26	454.01	0.3616	-3.32	15.70	0.088	35.493	687.56	32.492	671.46
hub	6.406	18.600												

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TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

** values of parameters on streamlines at station, 23, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.572	18.500												
1	9.523	18.519	621.39	643.42	-39.69	644.65	0.5179	-3.53	15.04	0.111	35.859	691.87	29.977	659.37
2	9.309	18.602	602.53	625.32	-20.56	625.66	0.5032	-1.88	15.52	0.114	35.840	688.43	30.256	657.81
3	9.088	18.688	591.33	615.11	-6.66	615.15	0.4949	-0.62	15.98	0.112	35.973	686.92	30.532	657.31
4	8.859	18.777	577.51	602.19	-0.45	602.19	0.4847	-0.04	16.46	0.108	36.059	685.01	30.806	656.63
5	8.621	18.870	558.78	584.19	2.44	584.20	0.4703	0.24	16.96	0.105	36.046	683.02	31.073	656.30
6	8.371	18.967	542.67	569.03	3.32	569.04	0.4579	0.33	17.51	0.102	36.065	682.29	31.327	656.94
7	8.107	19.070	520.63	547.77	4.41	547.79	0.4404	0.46	18.11	0.099	35.977	681.88	31.578	658.39
8	7.826	19.179	500.95	529.19	3.33	529.20	0.4248	0.36	18.80	0.099	35.930	682.22	31.819	660.31
9	7.522	19.298	472.68	501.77	2.23	501.78	0.4023	0.25	19.61	0.099	35.759	681.97	32.063	662.27
10	7.187	19.428	440.31	470.27	-4.83	470.30	0.3761	-0.59	20.56	0.103	35.543	683.16	32.305	665.86
11	6.813	19.574	416.66	448.46	-24.98	449.15	0.3577	-3.19	21.70	0.111	35.496	687.44	32.556	671.68
hub	6.745	19.600												

** values of parameters on streamlines at station, 24, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.812	19.250												
1	9.766	19.274	592.88	635.94	-38.71	637.11	0.5116	-3.48	21.20	0.151	35.859	691.68	30.104	659.94
2	9.565	19.378	571.67	613.78	-20.01	614.10	0.4935	-1.87	21.35	0.128	35.841	688.37	30.448	658.87
3	9.358	19.486	560.64	602.71	-6.47	602.74	0.4845	-0.62	21.54	0.111	35.972	686.89	30.736	658.46
4	9.143	19.598	548.35	590.60	-0.44	590.60	0.4750	-0.04	21.80	0.100	36.058	685.02	30.995	657.72
5	8.921	19.714	531.84	574.29	2.36	574.30	0.4620	0.24	22.17	0.092	36.045	683.06	31.231	657.24
6	8.688	19.835	518.32	561.65	3.19	561.65	0.4517	0.33	22.65	0.087	36.064	682.34	31.443	657.64
7	8.444	19.962	498.81	543.02	4.24	543.04	0.4364	0.45	23.28	0.084	35.976	681.93	31.650	658.84
8	8.186	20.097	481.65	527.62	3.18	527.63	0.4235	0.35	24.10	0.083	35.929	682.27	31.842	660.48
9	7.910	20.240	455.79	503.51	2.12	503.51	0.4037	0.24	25.15	0.084	35.760	682.02	32.039	662.18
10	7.610	20.397	425.52	475.60	-4.57	475.62	0.3804	-0.55	26.53	0.088	35.545	683.18	32.237	665.49
11	7.280	20.568	402.73	457.75	-23.38	458.35	0.3652	-2.92	28.38	0.094	35.499	687.30	32.440	670.89
hub	7.219	20.600												

1

** values of parameters on streamlines at station, 25, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.149	20.000												
1	10.106	20.027	518.11	579.82	-37.40	581.03	0.4648	-3.69	26.68	0.067	35.859	691.50	31.020	665.12
2	9.909	20.151	510.50	568.30	-19.31	568.62	0.4556	-1.95	26.06	0.058	35.841	688.31	31.178	663.03
3	9.707	20.277	510.59	566.80	-6.24	566.84	0.4546	-0.63	25.73	0.051	35.972	686.85	31.310	661.72
4	9.501	20.407	507.58	563.06	-0.42	563.06	0.4520	-0.04	25.65	0.046	36.057	685.02	31.432	660.21
5	9.289	20.539	498.99	554.15	2.27	554.16	0.4453	0.23	25.78	0.043	36.044	683.09	31.546	659.06

TABLE 2 - EXAMPLE OUTPUT DATA SET(no stator reset)

6	9.071	20.676	492.75	548.86	3.06	548.87	0.4411	0.32	26.13	0.040	36.063	682.38	31.640	658.80
7	8.844	20.819	479.86	537.20	4.05	537.22	0.4316	0.43	26.71	0.039	35.976	681.97	31.738	659.38
8	8.608	20.967	469.15	529.22	3.02	529.23	0.4248	0.33	27.56	0.038	35.929	682.32	31.818	660.40
9	8.360	21.122	449.79	512.96	2.00	512.96	0.4115	0.22	28.73	0.039	35.760	682.07	31.905	661.47
10	8.096	21.288	426.16	493.78	-4.29	493.80	0.3953	-0.50	30.34	0.040	35.548	683.21	31.991	664.13
11	7.813	21.465	409.35	485.41	-21.78	485.90	0.3877	-2.57	32.51	0.041	35.502	687.17	32.077	668.72
hub	7.758	21.500												

1

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

1

*** input data for axial-flow compressor off-design performance prediction program ***

low aspect ratio two stage nasa fan-- with stator resets

stator reset

fraction design speed	reset guide vane angle	reset stator 1 angle	reset stator 2 angle	reset stator 3 angle	reset stator 4 angle
1.00000	0.00000	-10.00000	5.00000	0.00000	0.00000
0.70000	0.00000	-10.00000	5.00000	0.00000	0.00000

the comp. design rotational speed is 16042.8 rpm.

the design inlet flow rate is 73.300 (lb/sec).

the compressor design pressure ratio is 2.400 .

the range to be covered to the choke side is 0.143 .

the range to be covered to the stall side is 0.190 .

calcs. will be made on 11 streamlines.

the compressor has 4 blade rows.

the molecular weight is 28.96 .

the choke point interval is 0.025 .

the stall point interval is 0.027 .

calculations will be made at the blade edges and at 17 annular stations.

the fractions of design speed to be investigated are 1.000 0.700

the specific heat polynomial is in the following form

cp = 0.23762E+00 + 0.39557E-04*t + -0.28463E-06*t**2 + 0.81651E-09*t**3 + -0.81994E-12*t**4 + 0.28443E-15*t**5

input distributions by streamline or streamtube

streamline no.	inlet total temperature (deg. r.)	inlet total pressure (psia)	inlet whirl velocity (ft/sec)	streamtube no.	streamtube flow fraction
1	518.700	14.125	0.000	1	0.1000
2	518.700	14.670	0.000	2	0.2000
3	518.700	14.700	0.000	3	0.3000
4	518.700	14.700	0.000	4	0.4000
5	518.700	14.700	0.000	5	0.5000
6	518.700	14.700	0.000	6	0.6000
7	518.700	14.700	0.000	7	0.7000
8	518.700	14.700	0.000	8	0.8000
9	518.700	14.700	0.000	9	0.9000
10	518.700	14.700	0.000	10	1.0000

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

```
          11          518.700          14.660          0.000
1
```

input data points for tip and hub contours.

tip axial coordinate (inches)	tip radius (inches)	hub axial coordinate (inches)	hub radius (inches)
-14.000	10.100	-14.000	3.750
-7.000	10.100	-13.100	3.750
-3.000	10.100	-12.200	3.750
-1.100	10.100	-11.300	3.725
-0.200	10.080	-9.900	3.675
0.527	9.980	-7.800	3.600
1.100	9.870	-5.700	3.525
2.700	9.651	-4.800	3.500
4.000	9.600	-3.590	3.520
5.610	9.600	-2.000	3.580
7.200	9.600	-1.250	3.690
7.800	9.600	0.000	4.000
8.400	9.540	1.000	4.320
9.150	9.440	2.500	4.630
9.900	9.360	3.700	4.800
10.600	9.328	5.300	4.940
11.600	9.300	6.100	5.020
13.000	9.300	6.900	5.090
15.300	9.300	7.600	5.160
16.459	9.300	8.700	5.330
17.000	9.319	9.300	5.450
18.000	9.453	9.900	5.600
18.683	9.623	10.700	5.720
20.000	10.149	11.300	5.800
22.000	11.605	12.500	5.860
		13.700	5.920
		14.900	5.960
		16.000	6.000
		17.000	6.080
		18.000	6.253
		18.683	6.430
		20.000	6.917
		22.000	8.093

```
1                    the input reference profile loss tables --- omega(bar)*cos(beta)/(2.0*sigma)
```

** profile loss table no. 1 **

pct. pass.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.
0.00	0.3000	0.0139	0.4000	0.0166	0.5000	0.0203	0.6000	0.0260	0.7000	0.0338
10.00	0.3000	0.0112	0.4000	0.0130	0.5000	0.0160	0.6000	0.0202	0.7000	0.0263
20.00	0.3000	0.0100	0.4000	0.0113	0.5000	0.0132	0.6000	0.0163	0.7000	0.0210
30.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
40.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
50.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
60.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
70.00	0.3000	0.0080	0.4000	0.0089	0.5000	0.0103	0.6000	0.0130	0.7000	0.0165
80.00	0.3000	0.0090	0.4000	0.0103	0.5000	0.0122	0.6000	0.0153	0.7000	0.0200
90.00	0.3000	0.0092	0.4000	0.0110	0.5000	0.0140	0.6000	0.0182	0.7000	0.0243
100.00	0.3000	0.0104	0.4000	0.0127	0.5000	0.0168	0.6000	0.0221	0.7000	0.0296

** profile loss table no. 2 **

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

pct. pass.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.	d-factor	loss param.
0.00	0.3000	0.0309	0.4000	0.0336	0.5000	0.0373	0.6000	0.0430	0.7000	0.0508
10.00	0.3000	0.0272	0.4000	0.0290	0.5000	0.0320	0.6000	0.0362	0.7000	0.0423
20.00	0.3000	0.0250	0.4000	0.0263	0.5000	0.0282	0.6000	0.0313	0.7000	0.0360
30.00	0.3000	0.0230	0.4000	0.0239	0.5000	0.0253	0.6000	0.0280	0.7000	0.0310
40.00	0.3000	0.0211	0.4000	0.0220	0.5000	0.0234	0.6000	0.0261	0.7000	0.0296
50.00	0.3000	0.0212	0.4000	0.0222	0.5000	0.0236	0.6000	0.0264	0.7000	0.0299
60.00	0.3000	0.0214	0.4000	0.0226	0.5000	0.0241	0.6000	0.0269	0.7000	0.0306
70.00	0.3000	0.0218	0.4000	0.0231	0.5000	0.0248	0.6000	0.0278	0.7000	0.0317
80.00	0.3000	0.0233	0.4000	0.0248	0.5000	0.0270	0.6000	0.0303	0.7000	0.0347
90.00	0.3000	0.0272	0.4000	0.0290	0.5000	0.0320	0.6000	0.0362	0.7000	0.0423
100.00	0.3000	0.0294	0.4000	0.0317	0.5000	0.0358	0.6000	0.0441	0.7000	0.0486

1 *** input station data ***

** input set no. 1 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-11.0000	-11.0000	0.0000	0.0000

** input set no. 2 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-9.0000	-9.0000	0.0044	0.0122

** input set no. 3 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-7.0000	-7.0000	0.0088	0.0249

** input set no. 4 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-5.2000	-5.2000	0.0133	0.0382

** input set no. 5 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-3.7000	-3.7000	0.0222	0.0632

** input set no. 6 is an annular station **

tip axial location	hub axial location	tip b. layer thick.	hub b. layer thick.

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

(inches)	(inches)	(inches)	(inches)
-2.3000	-2.6000	0.0289	0.0818

1 *** input station data ***

** input set no. 7 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
-1.0000	-1.5000	0.0354	0.0990

1 *** input station data ***

** input set no. 8 is rotor no. 1 **

tip c.g. axial location (inches)	hub c.g. axial location (inches)	inlet tip b. layer thick. (inches)	inlet hub b. layer thick. (inches)	blade dihedral angle (degrees)	range improvement bleed option
0.9410	0.9410	0.0457	0.1226	0.00	0.00000

number of blades	adia. eff. of cum. comp. stages at design	outlet tip b. layer thick. (inches)	outlet hub b. layer thick. (inches)	cum. energy addition fract. thru this stage
22	0.8569	0.0524	0.1026	0.5000

* table of input blade element definition parameters *

strm. no.	l.e.rad. /chord	t.e.rad. /chord	max.th. /chord	max.th. pt.loc. /chord	tran.pt. location /chord	segment in/out turn.rate	in.blade angle (deg)	out.blade angle (deg)	aero. chord (in.)	layout cone ang. (deg)	stack pt. radius (in.)	l.e.cir.cen.loc. from stack. z (in.)	line o (deg)
1	0.00180	0.00180	0.02901	0.64000	0.70000	0.07500	67.264	53.820	3.66433	-10.148	9.8555	0.74283	-10.113
2	0.00185	0.00187	0.03000	0.63000	0.64740	0.18000	63.415	52.955	3.67082	-7.508	9.4199	0.87783	-10.289
3	0.00198	0.00203	0.03241	0.62000	0.60420	0.43000	61.346	52.733	3.66862	-5.698	8.9938	0.94321	-10.565
4	0.00219	0.00227	0.03617	0.61000	0.56270	0.66000	59.473	50.579	3.66661	-3.909	8.5539	1.00447	-10.879
5	0.00246	0.00258	0.04115	0.60000	0.51930	0.79000	57.362	47.352	3.66512	-2.152	8.0940	1.07705	-11.212
6	0.00279	0.00296	0.04726	0.58000	0.47050	0.83000	55.066	42.201	3.66436	-0.384	7.6089	1.15829	-11.490
7	0.00319	0.00338	0.05432	0.56000	0.41800	0.86000	52.455	36.314	3.66481	1.443	7.0903	1.25020	-11.752
8	0.00362	0.00382	0.06208	0.54000	0.35920	0.96000	49.456	27.960	3.66763	3.460	6.5284	1.36213	-11.896
9	0.00409	0.00424	0.07007	0.50000	0.28620	0.98000	45.822	17.331	3.67588	5.871	5.9069	1.48369	-11.707
10	0.00453	0.00460	0.07717	0.50000	0.22430	1.00000	41.866	2.559	3.69775	8.994	5.1979	1.64486	-11.117
11	0.00480	0.00480	0.08022	0.50000	0.16290	1.00000	36.961	-16.396	3.76167	13.853	4.3319	1.80300	-9.081

1 * parameters for greater specification of blade element geometry *

strm. no.	poly. coef. for 1st seg. centerline angle (function of path dist. from trans. pt.) linear	quadratic	cubic	quartic	poly. coef. for 2nd seg. centerline angle (function of path dist. from trans. pt.) linear	quadratic	cubic	quartic
1	0.35068	0.69148	0.00000	-0.69148	-0.69642	0.00000	-0.69148	0.00000
2	0.34861	0.59478	0.00000	-0.59478	-0.64600	0.00000	-0.59478	0.00000
3	0.34878	0.51486	0.00000	-0.51486	-0.60621	0.00000	-0.51486	0.00000

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

4	0.34567	0.43744	0.00000	-0.43744	-0.56439	0.00000	-0.43744	0.00000
5	0.33819	0.36198	0.00000	-0.36198	-0.51919	0.00000	-0.36198	0.00000
6	0.32537	0.28869	0.00000	-0.28869	-0.46972	0.00000	-0.28869	0.00000
7	0.30730	0.21909	0.00000	-0.21909	-0.41684	0.00000	-0.21909	0.00000
8	0.28207	0.15351	0.00000	-0.15351	-0.35882	0.00000	-0.15351	0.00000
9	0.24783	0.09350	0.00000	-0.09350	-0.29458	0.00000	-0.09350	0.00000
10	0.20606	0.04251	0.00000	-0.04251	-0.22732	0.00000	-0.04251	0.00000
11	0.15184	0.00295	0.00000	-0.00295	-0.15331	0.00000	-0.00295	0.00000

strm. no.	poly. coef. for 1st segment thickness (function of path dist. from max.th. pt.) sq.root	quadratic	cubic	quartic	poly. coef. for 2nd segment thickness (function of path dist. from max.th. pt.) sq.root	quadratic	cubic	quartic	ellipse major/minor axis ratio minus 1.0 lead.edge	trail.edge
1	0.00000	0.02709	0.00000	0.00000	0.00008	0.00000	0.27199	0.00000	0.99291	0.00000
2	0.00000	0.02934	0.00000	0.00000	0.00085	0.00000	0.25633	0.00000	0.92071	0.00000
3	0.00000	0.03325	0.00000	0.00000	0.00170	0.00000	0.25255	0.00000	0.84931	0.00000
4	0.00000	0.03894	0.00000	0.00000	0.00276	0.00000	0.25692	0.00000	0.77507	0.00000
5	0.00000	0.04652	0.00000	0.00000	0.00411	0.00000	0.26696	0.00000	0.69722	0.00000
6	0.00000	0.05803	0.00000	0.00000	0.00578	0.00000	0.26032	0.00000	0.61460	0.00000
7	0.00000	0.07258	0.00000	0.00000	0.00786	0.00000	0.25567	0.00000	0.52559	0.00000
8	0.00000	0.09027	0.00000	0.00000	0.01043	0.00000	0.25019	0.00000	0.42781	0.00000
9	0.00000	0.11980	0.00000	0.00000	0.01320	0.00000	0.21388	0.00000	0.31739	0.00000
10	0.00000	0.13174	0.00000	0.00000	0.01690	0.00000	0.22524	0.00000	0.18699	0.00000
11	0.00000	0.13492	0.00000	0.00000	0.02038	0.00000	0.21545	0.00000	0.01926	0.00000

1 *** input station data ***

** input set no. 9 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
3.0000	3.3000	0.0553	0.1100

1 *** input station data ***

** input set no. 10 is a guide vane or stator **

tip c.g. axial location (inches)	hub c.g. axial location (inches)	inlet tip b. layer thick. (inches)	inlet hub b. layer thick. (inches)	blade dihedral angle (degrees)	range improvement bleed option
5.2000	5.2000	0.0610	0.1193	0.00	0.00000

+

number of blades	blade rotation option for stall margin	outlet tip b. layer thick. (inches)	outlet hub b. layer thick. (inches)
34		0.0697	0.1309

* table of input blade element definition parameters *

strm. no.	l.e.rad. /chord	t.e.rad. /chord	max.th. /chord	max.th. pt.loc. /chord	tran.pt. location /chord	segment in/out turn rate	in.blade angle (deg)	out.blade angle (deg)	aero. chord (in.)	layout cone ang. (deg)	stack pt. radius (in.)	l.e.cir.cen.loc. from stack. line z (in.)	o (deg)

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

```
+                                                                                                                                -

  1   0.01290  0.01288  0.07974  0.50000  0.40000  1.00000    36.693   -16.092   2.27025   -0.290   9.5325   1.05366    2.319
  2   0.01229  0.01228  0.07823  0.50000  0.40000  1.00000    33.496   -12.257   2.27027    0.237   9.1825   1.05744    2.292
  3   0.01168  0.01167  0.07670  0.50000  0.40000  1.00000    33.488   -10.483   2.27035    0.567   8.8260   1.05412    2.455
  4   0.01105  0.01103  0.07512  0.50000  0.40000  1.00000    33.899    -9.693   2.27052    0.925   8.4564   1.05142    2.636
  5   0.01039  0.01037  0.07346  0.50000  0.40000  1.00000    34.604    -9.098   2.27082    1.349   8.0711   1.04792    2.859
  6   0.00969  0.00967  0.07172  0.50000  0.40000  1.00000    35.845    -8.801   2.27134    1.878   7.6663   1.04265    3.153
  7   0.00894  0.00894  0.06986  0.50000  0.40000  1.00000    37.275    -8.604   2.27222    2.540   7.2369   1.03645    3.509
  8   0.00815  0.00816  0.06786  0.50000  0.40000  1.00000    38.928    -8.808   2.27360    3.329   6.7766   1.02986    3.938
  9   0.00728  0.00732  0.06569  0.50000  0.40000  1.00000    40.825    -9.009   2.27565    4.253   6.2769   1.02159    4.492
 10   0.00631  0.00637  0.06328  0.50000  0.40000  1.00000    43.448   -10.288   2.27828    5.230   5.7206   1.01267    5.234
 11   0.00520  0.00523  0.06050  0.50000  0.40000  1.00000    46.876   -14.152   2.27877    5.458   5.0639   1.00865    6.219
1                              * parameters for greater specification of blade element geometry *

          poly. coef. for 1st seg. centerline angle          poly. coef. for 2nd seg. centerline angle
strm.     (function of path dist. from trans. pt.)           (function of path dist. from trans. pt.)
no.       ****************************************           ****************************************
          linear    quadratic    cubic     quartic           linear    quadratic    cubic     quartic

    1     0.33433    0.00000    0.00000    0.00000          -0.33433    0.00000    0.00000    0.00000
    2     0.30912    0.00000    0.00000    0.00000          -0.30912    0.00000    0.00000    0.00000
    3     0.30245    0.00000    0.00000    0.00000          -0.30245    0.00000    0.00000    0.00000
    4     0.29634    0.00000    0.00000    0.00000          -0.29634    0.00000    0.00000    0.00000
    5     0.29086    0.00000    0.00000    0.00000          -0.29086    0.00000    0.00000    0.00000
    6     0.28697    0.00000    0.00000    0.00000          -0.28697    0.00000    0.00000    0.00000
    7     0.28211    0.00000    0.00000    0.00000          -0.28211    0.00000    0.00000    0.00000
    8     0.27554    0.00000    0.00000    0.00000          -0.27554    0.00000    0.00000    0.00000
    9     0.26708    0.00000    0.00000    0.00000          -0.26708    0.00000    0.00000    0.00000
   10     0.25652    0.00000    0.00000    0.00000          -0.25652    0.00000    0.00000    0.00000
   11     0.24034    0.00000    0.00000    0.00000          -0.24034    0.00000    0.00000    0.00000

          poly. coef. for 1st segment thickness              poly. coef. for 2nd segment thickness              ellipse major/minor
strm.     (function of path dist. from max.th. pt.)          (function of path dist. from max.th. pt.)          axis ratio minus 1.0
no.       ****************************************           ****************************************           ********************
          sq.root   quadratic    cubic     quartic           sq.root   quadratic    cubic     quartic           lead.edge trail.edge

    1     0.00000    0.10558    0.00000    0.00000           0.00000    0.10565    0.00000    0.00000           0.00000   0.00000
    2     0.00000    0.10663    0.00000    0.00000           0.00000    0.10666    0.00000    0.00000           0.00000   0.00000
    3     0.00000    0.10621    0.00000    0.00000           0.00000    0.10625    0.00000    0.00000           0.00000   0.00000
    4     0.00000    0.10542    0.00000    0.00000           0.00000    0.10547    0.00000    0.00000           0.00000   0.00000
    5     0.00000    0.10448    0.00000    0.00000           0.00000    0.10452    0.00000    0.00000           0.00000   0.00000
    6     0.00000    0.10331    0.00000    0.00000           0.00000    0.10332    0.00000    0.00000           0.00000   0.00000
    7     0.00000    0.10201    0.00000    0.00000           0.00000    0.10197    0.00000    0.00000           0.00000   0.00000
    8     0.00000    0.10051    0.00000    0.00000           0.00000    0.10038    0.00000    0.00000           0.00000   0.00000
    9     0.00000    0.09886    0.00000    0.00000           0.00000    0.09862    0.00000    0.00000           0.00000   0.00000
   10     0.00000    0.09664    0.00000    0.00000           0.00000    0.09627    0.00000    0.00000           0.00000   0.00000
   11     0.00000    0.09324    0.00000    0.00000           0.00000    0.09290    0.00000    0.00000           0.00000   0.00000
1                                                  *** input station data ***

                                  ** input set no. 11 is an annular station **

          tip axial location      hub axial location      tip b. layer thick.      hub b. layer thick.
                (inches)                (inches)                (inches)                (inches)

                7.3400                  7.3400                  0.0689                  0.1276

1                                                  *** input station data ***

                                  ** input set no. 12 is rotor no.  2 **
```

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

tip c.g. axial location (inches)	hub c.g. axial location (inches)	inlet tip b. layer thick. (inches)	inlet hub b. layer thick. (inches)	blade dihedral angle (degrees)	range improvement bleed option
9.2000	9.2000	0.0663	0.1231	0.00	
+					0.00000

number of blades	adia. eff. of cum. comp. stages at design	outlet tip b. layer thick. (inches)	outlet hub b. layer thick. (inches)	cum. energy addition fract. thru this stage
38	0.8526	0.0608	0.0995	1.0000

* table of input blade element definition parameters *

strm. no.	l.e.rad. /chord	t.e.rad. /chord	max.th. /chord	max.th. pt.loc. /chord	tran.pt. location /chord	segment in/out turn.rate	in.blade angle (deg)	out.blade angle (deg)	aero. chord (in.)	layout cone ang. (deg)	stack pt. radius (in.)	l.e.cir.cen.loc. from stack. z (in.)	line o (deg)
+													-
1	0.00614	0.00615	0.03403	0.50000	0.66270	0.61000	62.046	56.549	2.02543	-6.611	9.3752	0.48473	-5.280
2	0.00682	0.00686	0.03507	0.50000	0.63508	0.66300	61.065	55.480	2.02737	-5.160	9.0680	0.50145	-5.406
3	0.00751	0.00759	0.03744	0.50000	0.60532	0.76700	59.945	53.732	2.02656	-3.787	8.7545	0.52265	-5.518
4	0.00822	0.00834	0.04100	0.50000	0.57342	0.88600	58.660	51.711	2.02594	-2.439	8.4319	0.54695	-5.630
5	0.00895	0.00911	0.04561	0.50000	0.53954	0.98100	57.239	49.221	2.02554	-1.076	8.0986	0.57419	-5.741
6	0.00972	0.00991	0.05110	0.50000	0.50394	1.00000	55.718	46.031	2.02544	0.303	7.7514	0.60400	-5.850
7	0.01053	0.01075	0.05726	0.50000	0.46654	1.00000	54.155	41.968	2.02578	1.746	7.3862	0.63685	-5.952
8	0.01140	0.01163	0.06383	0.50000	0.42725	1.00000	52.589	36.760	2.02689	3.363	6.9982	0.67351	-6.043
9	0.01235	0.01256	0.07038	0.50000	0.40000	1.00000	51.128	30.009	2.02957	5.318	6.5811	0.71444	-6.121
10	0.01341	0.01357	0.07622	0.50000	0.40000	1.00000	50.352	20.164	2.03577	7.811	6.1192	0.76065	-6.180
11	0.01474	0.01476	0.07989	0.50000	0.40000	1.00000	52.662	-0.228	2.05176	11.213	5.5584	0.83368	-6.192

1 *** input station data ***

** input set no. 13 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
11.0100	11.0100	0.0577	0.0928

1 *** input station data ***

** input set no. 14 is a guide vane or stator **

tip c.g. axial location (inches)	hub c.g. axial location (inches)	inlet tip b. layer thick. (inches)	inlet hub b. layer thick. (inches)	blade dihedral angle (degrees)	range improvement bleed option
12.7000	12.7000	0.0564	0.0890	0.00	
+					0.00000

number of blades	blade rotation option for stall margin	outlet tip b. layer thick. (inches)	outlet hub b. layer thick. (inches)
42		0.0556	0.0866

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

* table of input blade element definition parameters *

strm. no.	l.e.rad. /chord	t.e.rad. /chord	max.th. /chord	max.th. pt.loc. /chord	tran.pt. location /chord	segment in/out turn.rate	in.blade angle (deg)	out.blade angle (deg)	aero. chord (in.)	layout cone ang. (deg)	stack pt. radius (in.)	l.e.cir.cen.loc. from stack. z (in.)	line o (deg)
1	0.01387	0.01387	0.07967	0.50000	0.40000	1.00000	35.156	-15.591	1.75296	0.218	9.2437	0.81577	1.758
2	0.01323	0.01323	0.07807	0.50000	0.40000	1.00000	34.571	-12.796	1.75301	0.413	8.9689	0.81297	1.857
3	0.01257	0.01257	0.07643	0.50000	0.40000	1.00000	34.651	-10.900	1.75305	0.584	8.6891	0.80990	1.981
4	0.01190	0.01190	0.07476	0.50000	0.40000	1.00000	34.762	-9.901	1.75310	0.743	8.4021	0.80850	2.091
5	0.01121	0.01121	0.07304	0.50000	0.40000	1.00000	35.247	-9.401	1.75316	0.900	8.1069	0.80689	2.222
6	0.01050	0.01049	0.07125	0.50000	0.40000	1.00000	36.187	-9.202	1.75324	1.077	7.8010	0.80427	2.390
7	0.00975	0.00975	0.06938	0.50000	0.40000	1.00000	37.386	-9.103	1.75335	1.280	7.4815	0.80084	2.594
8	0.00897	0.00896	0.06742	0.50000	0.40000	1.00000	38.803	-9.304	1.75349	1.497	7.1458	0.79710	2.831
9	0.00814	0.00813	0.06535	0.50000	0.40000	1.00000	40.462	-9.603	1.75364	1.703	6.7902	0.79249	3.117
10	0.00724	0.00723	0.06311	0.50000	0.40000	1.00000	43.769	-11.099	1.75379	1.906	6.4061	0.78390	3.556
11	0.00621	0.00620	0.06051	0.50000	0.40000	1.00000	52.207	-15.990	1.75422	2.433	5.9636	0.76049	4.456

1 *** input station data ***

** input set no. 15 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
14.4400	14.4400	0.0552	0.0855

** input set no. 16 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
15.7000	16.0000	0.0549	0.0839

** input set no. 17 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
17.0000	17.6000	0.0538	0.0799

** input set no. 18 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
17.7500	18.6000	0.0529	0.0765

** input set no. 19 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

18.5000	19.6000	0.0521	0.0730

** input set no. 20 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
19.2500	20.6000	0.0511	0.0687

1 *** input station data ***

** input set no. 21 is an annular station **

tip axial location (inches)	hub axial location (inches)	tip b. layer thick. (inches)	hub b. layer thick. (inches)
20.0000	21.5000	0.0500	0.0649

radius array

i	*	1	2	3	4	5	6	7	8	9	10	11
1	*	10.0990	9.6525	9.1843	8.6909	8.1678	7.6088	7.0053	6.3447	5.6067	4.7556	3.7144
2	*	10.0948	9.6462	9.1758	8.6799	8.1539	7.5915	6.9840	6.3184	5.5738	4.7130	3.6548
3	*	10.0912	9.6407	9.1680	8.6697	8.1409	7.5753	6.9639	6.2933	5.5422	4.6720	3.5969
4	*	10.0878	9.6356	9.1611	8.6606	8.1294	7.5609	6.9461	6.2713	5.5145	4.6358	3.5457
5	*	10.0787	9.6283	9.1558	8.6575	8.1288	7.5632	6.9517	6.2809	5.5294	4.6582	3.5810
6	*	10.0698	9.6215	9.1513	8.6556	8.1297	7.5673	6.9596	6.2935	5.5480	4.6854	3.6229
7	*	10.0652	9.6219	9.1573	8.6677	8.1488	7.5945	6.9964	6.3422	5.6123	4.7719	3.7477
8	*	10.0542	9.6149	9.1545	8.6696	8.1560	7.6078	7.0170	6.3715	5.6528	4.8283	3.8302
9	*	9.6872	9.3116	8.9202	8.5109	8.0808	7.6265	7.1434	6.6251	6.0627	5.4425	4.7419
10	*	9.5746	9.2124	8.8353	8.4414	8.0283	7.5926	7.1304	6.6361	6.1019	5.5161	4.8603
11	*	9.5376	9.1835	8.8151	8.4307	8.0280	7.6039	7.1547	6.6753	6.1588	5.5947	4.9671
12	*	9.5268	9.1849	8.8297	8.4597	8.0727	7.6662	7.2370	6.7806	6.2911	5.7603	5.1752
13	*	9.5337	9.1961	8.8456	8.4807	8.0993	7.6991	7.2769	6.8287	6.3489	5.8297	5.2595
14	*	9.4327	9.1096	8.7747	8.4264	8.0631	7.6826	7.2823	6.8587	6.4071	5.9212	5.3916
15	*	9.3129	9.0199	8.7171	8.4033	8.0774	7.7378	7.3825	7.0093	6.6150	6.1957	5.7459
16	*	9.2570	8.9751	8.6841	8.3830	8.0706	7.7457	7.4065	7.0511	6.6767	6.2800	5.8566
17	*	9.2405	8.9647	8.6801	8.3859	8.0810	7.7641	7.4338	7.0880	6.7245	6.3402	5.9310
18	*	9.2471	8.9755	8.6954	8.4060	8.1063	7.7951	7.4709	7.1320	6.7761	6.4005	6.0015
19	*	9.2481	8.9785	8.7006	8.4135	8.1162	7.8077	7.4864	7.1507	6.7985	6.4269	6.0326
20	*	9.2428	8.9771	8.7032	8.4204	8.1278	7.8243	7.5085	7.1788	6.8333	6.4693	6.0836
21	*	9.2657	9.0097	8.7461	8.4744	8.1937	7.9030	7.6012	7.2869	6.9584	6.6136	6.2499
22	*	9.3553	9.1087	8.8552	8.5942	8.3251	8.0470	7.7589	7.4597	7.1479	6.8220	6.4797
23	*	9.5226	9.2873	9.0459	8.7979	8.5426	8.2795	8.0078	7.7265	7.4346	7.1307	6.8133
24	*	9.7661	9.5467	9.3221	9.0919	8.8558	8.6132	8.3635	8.1062	7.8404	7.5653	7.2798
25	*	10.1062	9.9008	9.6911	9.4767	9.2573	9.0326	8.8022	8.5656	8.3223	8.0716	7.8129

i	ift	z(ift,jm)	i	z(i,j)	ar
1	1	-11.0000	1	-11.0000	0.0000
2	2	-9.0000	2	-9.0000	3.2200
3	3	-7.0000	3	-7.0000	3.2471
4	4	-5.2000	4	-5.2000	3.6345
5	5	-3.7000	5	-3.7000	4.3318
6	6	-2.4158	6	-2.4158	5.0202

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

7	7	-1.1941	7	-1.1941	5.1713
8	9	2.6524	8	-0.5437	9.5688
9	11	4.1961	9	2.6524	1.5473
10	12	6.3346	10	3.1253	9.9685
11	13	7.3400	11	4.1961	4.2681
12	14	8.5705	12	6.3346	2.0348
13	15	9.8709	13	7.3400	4.2514
14	16	11.0100	14	8.5705	3.2841
15	17	11.8776	15	9.8709	2.7429
16	18	13.5824	16	11.0100	2.9852
17	19	14.4400	17	11.8776	3.8144
18	20	15.8340	18	13.5824	1.9039
19	21	17.2699	19	14.4400	3.7493
20	22	18.1351	20	15.8340	2.2663
21	23	19.0028	21	17.2699	2.1003
22	24	19.8740	22	18.1351	3.3236
23	25	20.7003	23	19.0028	3.1223
			24	19.8740	2.8540
			25	20.7003	2.7754

z array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000	-11.0000
2	*	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000	-9.0000
3	*	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000	-7.0000
4	*	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000	-5.2000
5	*	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000	-3.7000
6	*	-2.3013	-2.3218	-2.3433	-2.3660	-2.3901	-2.4158	-2.4436	-2.4741	-2.5081	-2.5476	-2.5962
7	*	-1.0027	-1.0371	-1.0731	-1.1110	-1.1512	-1.1941	-1.2405	-1.2911	-1.3477	-1.4128	-1.4921
8	*	-0.9429	-0.7890	-0.6785	-0.6087	-0.5633	-0.5437	-0.5600	-0.6198	-0.7618	-0.9417	-1.1249
9	*	1.5889	2.0072	2.2943	2.4444	2.5573	2.6524	2.7209	2.7631	2.7053	2.6886	2.7828
10	*	3.0034	3.0257	3.0489	3.0731	3.0985	3.1253	3.1537	3.1841	3.2169	3.2529	3.2932
11	*	4.1826	4.1922	4.1947	4.1959	4.1964	4.1961	4.1955	4.1945	4.1925	4.1864	4.1742
12	*	6.3435	6.3343	6.3326	6.3325	6.3331	6.3346	6.3367	6.3394	6.3430	6.3492	6.3592
13	*	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400	7.3400
14	*	8.7029	8.6845	8.6610	8.6340	8.6037	8.5705	8.5341	8.4939	8.4507	8.4027	8.3373
15	*	9.7328	9.7515	9.7763	9.8038	9.8351	9.8709	9.9123	9.9596	10.0125	10.0734	10.1427
16	*	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100	11.0100
17	*	11.8599	11.8638	11.8681	11.8707	11.8736	11.8776	11.8825	11.8877	11.8940	11.9050	11.9286
18	*	13.5877	13.5857	13.5840	13.5830	13.5825	13.5824	13.5823	13.5827	13.5832	13.5857	13.5931
19	*	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400	14.4400
20	*	15.7050	15.7292	15.7541	15.7798	15.8064	15.8340	15.8628	15.8928	15.9242	15.9573	15.9924
21	*	17.0102	17.0590	17.1092	17.1610	17.2145	17.2699	17.3274	17.3874	17.4500	17.5157	17.5850
22	*	17.7645	17.8344	17.9062	17.9801	18.0563	18.1351	18.2167	18.3015	18.3898	18.4822	18.5791
23	*	18.5190	18.6106	18.7046	18.8011	18.9004	19.0028	19.1086	19.2181	19.3317	19.4500	19.5735
24	*	19.2737	19.3879	19.5049	19.6247	19.7477	19.8740	20.0040	20.1380	20.2764	20.4196	20.5683
25	*	20.0268	20.1557	20.2873	20.4218	20.5594	20.7003	20.8449	20.9933	21.1459	21.3032	21.4655

to array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
2	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
3	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
4	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
5	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
6	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
7	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

8	*	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70	518.70
9	*	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
10	*	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
11	*	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
12	*	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
13	*	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
14	*	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51	602.51
15	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
16	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
17	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
18	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
19	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
20	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
21	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
22	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
23	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
24	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33
25	*	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33	686.33

po array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
2	*	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
3	*	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
4	*	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
5	*	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
6	*	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
7	*	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
8	*	2034.00	2112.48	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2116.80	2111.04
9	*	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20
10	*	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20
11	*	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20	3429.20
12	*	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83
13	*	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83
14	*	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83	3390.83
15	*	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86
16	*	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86
17	*	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86	5187.86
18	*	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
19	*	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
20	*	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
21	*	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
22	*	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
23	*	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
24	*	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52
25	*	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52	5135.52

vz array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	569.25	569.25	569.25	569.25	569.25	569.25	569.25	569.25	569.25	569.25	569.25
2	*	566.23	566.23	566.23	566.23	566.23	566.23	566.23	566.23	566.23	566.23	566.23
3	*	563.27	563.27	563.27	563.27	563.27	563.27	563.27	563.27	563.27	563.27	563.27
4	*	560.77	560.77	560.77	560.77	560.77	560.77	560.77	560.77	560.77	560.77	560.77
5	*	564.44	564.44	564.44	564.44	564.44	564.44	564.44	564.44	564.44	564.44	564.44
6	*	567.74	567.74	567.74	567.74	567.74	567.74	567.74	567.74	567.74	567.74	567.74
7	*	575.11	575.11	575.11	575.11	575.11	575.11	575.11	575.11	575.11	575.11	575.11

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

9	*	519.02	519.02	519.02	519.02	519.02	519.02	519.02	519.02	519.02	519.02	519.02
10	*	559.25	559.25	559.25	559.25	559.25	559.25	559.25	559.25	559.25	559.25	559.25
11	*	586.47	586.47	586.47	586.47	586.47	586.47	586.47	586.47	586.47	586.47	586.47
12	*	552.24	552.24	552.24	552.24	552.24	552.24	552.24	552.24	552.24	552.24	552.24
13	*	558.77	558.77	558.77	558.77	558.77	558.77	558.77	558.77	558.77	558.77	558.77
14	*	602.66	602.66	602.66	602.66	602.66	602.66	602.66	602.66	602.66	602.66	602.66
15	*	516.57	516.57	516.57	516.57	516.57	516.57	516.57	516.57	516.57	516.57	516.57
16	*	555.17	555.17	555.17	555.17	555.17	555.17	555.17	555.17	555.17	555.17	555.17
17	*	567.90	567.90	567.90	567.90	567.90	567.90	567.90	567.90	567.90	567.90	567.90
18	*	527.93	527.93	527.93	527.93	527.93	527.93	527.93	527.93	527.93	527.93	527.93
19	*	532.63	532.63	532.63	532.63	532.63	532.63	532.63	532.63	532.63	532.63	532.63
20	*	539.61	539.61	539.61	539.61	539.61	539.61	539.61	539.61	539.61	539.61	539.61
21	*	557.80	557.80	557.80	557.80	557.80	557.80	557.80	557.80	557.80	557.80	557.80
22	*	561.43	561.43	561.43	561.43	561.43	561.43	561.43	561.43	561.43	561.43	561.43
23	*	559.47	559.47	559.47	559.47	559.47	559.47	559.47	559.47	559.47	559.47	559.47
24	*	556.07	556.07	556.07	556.07	556.07	556.07	556.07	556.07	556.07	556.07	556.07
25	*	547.72	547.72	547.72	547.72	547.72	547.72	547.72	547.72	547.72	547.72	547.72

vth array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	*	381.89	397.29	414.72	434.67	457.80	485.07	517.88	558.39	610.19	679.72	780.15
10	*	386.38	401.57	418.71	438.25	460.80	487.24	518.82	557.47	606.28	670.65	761.15
11	*	387.88	402.83	419.67	438.80	460.82	486.52	517.06	554.19	600.67	661.23	744.79
12	*	19.45	20.18	20.99	21.91	22.96	24.17	25.61	27.33	29.46	32.17	35.81
13	*	19.44	20.15	20.95	21.85	22.88	24.07	25.47	27.14	29.19	31.79	35.24
14	*	19.65	20.34	21.12	21.99	22.98	24.12	25.45	27.02	28.93	31.30	34.37
15	*	417.13	430.68	445.65	462.29	480.94	502.05	526.21	554.23	587.26	627.01	676.09
16	*	419.66	432.84	447.34	463.41	481.34	501.54	524.50	550.95	581.84	618.59	663.31
17	*	420.40	433.34	447.54	463.25	480.73	500.35	522.58	548.07	577.70	612.72	654.99
18	*	18.16	18.71	19.32	19.98	20.72	21.55	22.48	23.55	24.79	26.24	27.99
19	*	18.16	18.71	19.31	19.96	20.70	21.51	22.44	23.49	24.71	26.14	27.84
20	*	18.17	18.71	19.30	19.95	20.67	21.47	22.37	23.40	24.58	25.96	27.61
21	*	18.13	18.64	19.20	19.82	20.50	21.25	22.10	23.05	24.14	25.40	26.88
22	*	17.95	18.44	18.97	19.54	20.18	20.87	21.65	22.52	23.50	24.62	25.92
23	*	17.64	18.09	18.57	19.09	19.66	20.29	20.98	21.74	22.59	23.56	24.65
24	*	17.20	17.59	18.02	18.47	18.97	19.50	20.08	20.72	21.42	22.20	23.07
25	*	16.62	16.97	17.33	17.72	18.14	18.60	19.08	19.61	20.18	20.81	21.50

slope array

i	*	1	2	3	4	5	6	7	8	9	10	11
	*											
1	*	-0.0022	-0.0033	-0.0045	-0.0059	-0.0075	-0.0093	-0.0114	-0.0142	-0.0178	-0.0230	-0.0321
2	*	-0.0020	-0.0029	-0.0039	-0.0051	-0.0064	-0.0078	-0.0096	-0.0119	-0.0148	-0.0192	-0.0268
3	*	-0.0015	-0.0027	-0.0041	-0.0057	-0.0075	-0.0096	-0.0122	-0.0154	-0.0196	-0.0258	-0.0368
4	*	-0.0028	-0.0030	-0.0029	-0.0027	-0.0025	-0.0022	-0.0019	-0.0015	-0.0010	-0.0005	0.0004
5	*	-0.0113	-0.0085	-0.0062	-0.0040	-0.0018	0.0007	0.0035	0.0069	0.0114	0.0178	0.0286
6	*	0.0103	0.0071	0.0066	0.0078	0.0098	0.0128	0.0169	0.0226	0.0304	0.0426	0.0663
7	*	-0.0577	-0.0325	-0.0152	-0.0015	0.0118	0.0255	0.0403	0.0576	0.0805	0.1118	0.1594
8	*	-0.0662	-0.0538	-0.0368	-0.0192	0.0002	0.0215	0.0447	0.0707	0.1024	0.1395	0.2093
9	*	-0.1340	-0.1015	-0.0805	-0.0610	-0.0399	-0.0159	0.0121	0.0455	0.0840	0.1318	0.2013

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

10	*	-0.0437	-0.0594	-0.0623	-0.0536	-0.0393	-0.0197	0.0053	0.0357	0.0667	0.1052	0.1863
11	*	-0.0169	-0.0234	-0.0245	-0.0196	-0.0113	0.0004	0.0161	0.0357	0.0569	0.0833	0.1271
12	*	0.0143	0.0217	0.0286	0.0347	0.0407	0.0465	0.0523	0.0581	0.0647	0.0721	0.0786
13	*	-0.0202	-0.0184	-0.0156	-0.0113	-0.0055	0.0023	0.0125	0.0259	0.0433	0.0668	0.1013
14	*	-0.1177	-0.0911	-0.0646	-0.0385	-0.0129	0.0127	0.0387	0.0658	0.0954	0.1293	0.1711
15	*	-0.0882	-0.0639	-0.0396	-0.0160	0.0071	0.0298	0.0525	0.0756	0.1005	0.1289	0.1632
16	*	-0.0228	-0.0183	-0.0132	-0.0071	0.0003	0.0092	0.0200	0.0334	0.0502	0.0718	0.1005
17	*	-0.0109	-0.0042	0.0028	0.0099	0.0172	0.0246	0.0323	0.0402	0.0481	0.0558	0.0620
18	*	0.0054	0.0071	0.0089	0.0109	0.0131	0.0156	0.0184	0.0218	0.0257	0.0304	0.0368
19	*	-0.0017	-0.0008	0.0035	0.0062	0.0091	0.0122	0.0155	0.0191	0.0230	0.0273	0.0323
20	*	-0.0069	-0.0022	0.0026	0.0075	0.0126	0.0180	0.0236	0.0295	0.0358	0.0427	0.0503
21	*	0.0697	0.0783	0.0872	0.0963	0.1058	0.1157	0.1262	0.1374	0.1495	0.1627	0.1774
22	*	0.1708	0.1792	0.1879	0.1969	0.2064	0.2165	0.2272	0.2388	0.2514	0.2654	0.2812
23	*	0.2687	0.2783	0.2883	0.2987	0.3098	0.3216	0.3342	0.3478	0.3628	0.3794	0.3980
24	*	0.3879	0.3991	0.4108	0.4231	0.4362	0.4501	0.4650	0.4812	0.4990	0.5185	0.5403
25	*	0.5024	0.5110	0.5203	0.5304	0.5415	0.5537	0.5671	0.5819	0.5983	0.6166	0.6373

rcurve array

i	*	1	2	3	4	5	6	7	8	9	10	11
1	*	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0009	0.0010
2	*	0.0002	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	-0.0001	-0.0002	0.0020
3	*	0.0001	-0.0001	0.0002	0.0006	0.0010	0.0016	0.0022	0.0030	0.0040	0.0055	-0.0066
4	*	-0.0021	-0.0013	-0.0003	0.0007	0.0018	0.0031	0.0046	0.0065	0.0090	0.0127	0.0432
5	*	-0.0049	0.0022	0.0026	0.0034	0.0044	0.0058	0.0075	0.0099	0.0132	0.0184	-0.0031
6	*	0.0212	-0.0098	-0.0045	-0.0002	0.0039	0.0082	0.0130	0.0187	0.0263	0.0368	0.0762
7	*	-0.1086	-0.0227	-0.0158	-0.0106	-0.0057	-0.0006	0.0048	0.0110	0.0184	0.0275	0.0614
8	*	-0.1046	-0.0400	-0.0277	-0.0200	-0.0136	-0.0077	-0.0018	0.0045	0.0124	0.0218	0.0432
9	*	0.0586	0.0047	0.0037	0.0026	0.0014	0.0001	-0.0014	-0.0033	-0.0060	-0.0096	-0.0417
10	*	0.0344	0.0287	0.0227	0.0168	0.0110	0.0050	-0.0013	-0.0080	-0.0160	-0.0263	-0.0414
11	*	0.0131	0.0238	0.0226	0.0204	0.0173	0.0132	0.0079	0.0012	-0.0064	-0.0158	-0.0392
12	*	0.0162	-0.0076	-0.0069	-0.0069	-0.0071	-0.0072	-0.0073	-0.0072	-0.0059	-0.0034	-0.0036
13	*	-0.0813	-0.0407	-0.0342	-0.0275	-0.0206	-0.0134	-0.0058	0.0026	0.0120	0.0233	0.0467
14	*	-0.0413	-0.0140	-0.0081	-0.0025	0.0028	0.0077	0.0121	0.0160	0.0197	0.0232	0.0660
15	*	0.0836	0.0264	0.0191	0.0120	0.0052	-0.0012	-0.0072	-0.0131	-0.0188	-0.0249	-0.0732
16	*	0.0095	0.0257	0.0193	0.0128	0.0063	-0.0004	-0.0075	-0.0152	-0.0242	-0.0355	-0.0471
17	*	0.0251	0.0119	0.0105	0.0088	0.0067	0.0040	0.0005	-0.0040	-0.0099	-0.0178	-0.0350
18	*	-0.0076	0.0005	-0.0004	-0.0014	-0.0025	-0.0036	-0.0048	-0.0061	-0.0075	-0.0090	0.0029
19	*	-0.0043	-0.0013	-0.0002	0.0009	0.0019	0.0029	0.0038	0.0045	0.0052	0.0057	-0.0121
20	*	0.0060	0.0309	0.0324	0.0340	0.0354	0.0369	0.0384	0.0399	0.0415	0.0431	0.0447
21	*	0.1095	0.0891	0.0881	0.0873	0.0865	0.0858	0.0853	0.0848	0.0845	0.0843	0.1019
22	*	0.1352	0.1197	0.1167	0.1138	0.1111	0.1085	0.1061	0.1038	0.1015	0.0994	0.0884
23	*	0.1114	0.1241	0.1211	0.1182	0.1155	0.1129	0.1104	0.1080	0.1057	0.1033	0.1106
24	*	0.1513	0.1158	0.1117	0.1078	0.1042	0.1007	0.0975	0.0943	0.0912	0.0882	0.0942
25	*	0.0666	0.0836	0.0796	0.0759	0.0725	0.0692	0.0661	0.0631	0.0603	0.0574	0.0415

1

*** computed compressor parameters for a rotational speed of 16042.8 rpm which is a speed fraction of 1.0000 ***

** the corrected weightflow per unit of casing annular area at the inlet face of the first blade row is 38.90 lbs/sec/ft sq **

** mass averaged rotor and stage aerodynamic parameters **

stage no.	blade type	flow coef.	head coef.	id. head coef.	press. ratio	temp. ratio	adia. eff.	poly. eff.	reset angle (deg)	for. ax. thrust (lbs)	gas bending moments for. ax. (ft-lbs)	tang. (ft-lbs)	torque (ft-lbs)	power (hp)
1	rotor	0.4446	0.2411	0.2629	1.6460	1.1605	0.9169	0.9223	0.00	1057.92	17.671	-12.757	703.71	2149.53
1	stator	0.4159	0.2207	0.2629	1.5822	1.1605	0.8395	0.8492	-10.01	-229.94	1.918	7.047		

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

2	rotor	0.4774	0.3133	0.3366	1.6497	1.1556	0.9307	0.9352	0.00	1563.20	8.841	-5.775	807.37	2466.15
2	stator	0.4065	0.3021	0.3366	1.6221	1.1577	0.8973	0.8926	5.00	-273.17	1.439	2.994		

** cumulative sums of mass averaged rotor and stage aerodydamic parameters **

stage no.	blade type	weight flow (lbs/sec)	total press. (psia)	total temp. (deg. r.)	press. ratio	temp. ratio	head coef.	ideal head coef.	adia. eff.	poly. eff.	for. ax. thrust (lbs)	torque (ft-lbs)	power (hp)	fract energy
1	inlet	73.30	14.666	518.70										
1	rotor	73.30	24.140	601.95	1.6460	1.1605	0.2411	0.2629	0.9169	0.9223	1057.92	703.71	2149.53	0.4624
1	stator	73.30	23.204	601.95	1.5822	1.1605	0.2207	0.2629	0.8395	0.8492	827.97			
2	rotor	73.30	38.280	696.86	2.6102	1.3435	0.4954	0.5686	0.8712	0.8865	2250.97	1521.84	4648.54	1.0000
2	stator	73.30	37.641	696.86	2.5666	1.3435	0.4855	0.5686	0.8539	0.8709	1977.79			

1

** values of parameters on streamlines at station, 1, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	*10.099*	*-11.000*												
1	10.099	-11.000	514.73	514.73	0.00	514.73	0.4731	0.00	-0.13	0.000	14.144	518.70	12.150	497.22
2	9.632	-11.000	571.93	571.93	0.00	571.93	0.5282	0.00	-0.15	0.000	14.670	518.70	12.149	492.17
3	9.167	-11.000	574.89	574.89	0.00	574.89	0.5311	0.00	-0.22	0.000	14.700	518.70	12.150	491.89
4	8.675	-11.000	574.81	574.82	0.00	574.82	0.5310	0.00	-0.29	0.000	14.700	518.70	12.151	491.90
5	8.154	-11.000	574.69	574.70	0.00	574.70	0.5309	0.00	-0.37	0.000	14.700	518.70	12.151	491.91
6	7.597	-11.000	574.54	574.56	0.00	574.56	0.5308	0.00	-0.47	0.000	14.700	518.70	12.153	491.92
7	6.996	-11.000	574.34	574.37	0.00	574.37	0.5306	0.00	-0.59	0.001	14.700	518.70	12.154	491.94
8	6.338	-11.000	574.09	574.14	0.00	574.14	0.5304	0.00	-0.74	0.001	14.700	518.70	12.156	491.96
9	5.603	-11.000	573.80	573.88	0.00	573.88	0.5301	0.00	-0.93	0.001	14.700	518.70	12.158	491.98
10	4.755	-11.000	573.47	573.60	0.00	573.60	0.5298	0.00	-1.22	0.000	14.700	518.70	12.161	492.01
11	3.714	-11.000	568.75	569.05	0.00	569.05	0.5254	0.00	-1.84	0.001	14.660	518.70	12.165	492.43
hub	3.714	-11.000												

** values of parameters on streamlines at station, 2, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.099	-9.000												
1	10.095	-9.000	515.97	515.97	0.00	515.97	0.4742	0.00	-0.11	0.000	14.180	518.70	12.172	497.11
2	9.627	-9.000	569.12	569.12	0.00	569.12	0.5255	0.00	-0.13	0.000	14.669	518.70	12.172	492.43
3	9.160	-9.000	571.97	571.97	0.00	571.97	0.5283	0.00	-0.18	0.000	14.698	518.70	12.172	492.16
4	8.666	-9.000	571.81	571.82	0.00	571.82	0.5281	0.00	-0.24	0.001	14.698	518.70	12.174	492.18
5	8.142	-9.000	571.60	571.60	0.00	571.60	0.5279	0.00	-0.31	0.001	14.698	518.70	12.175	492.20
6	7.582	-9.000	571.31	571.32	0.00	571.32	0.5276	0.00	-0.39	0.001	14.698	518.70	12.178	492.22
7	6.977	-9.000	570.94	570.96	0.00	570.96	0.5273	0.00	-0.50	0.001	14.698	518.70	12.181	492.26
8	6.314	-9.000	570.48	570.52	0.00	570.52	0.5269	0.00	-0.65	0.001	14.698	518.70	12.184	492.30

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

9	5.571	-9.000	569.95	570.01	0.00	570.01	0.5264	0.00	-0.85	0.001	14.698	518.70	12.188	492.34
10	4.713	-9.000	569.36	569.48	0.00	569.48	0.5258	0.00	-1.15	0.001	14.698	518.70	12.193	492.39
11	3.655	-9.000	564.35	564.55	0.00	564.55	0.5211	0.00	-1.54	0.002	14.658	518.70	12.200	492.85
hub	3.643	-9.000												

1

** values of parameters on streamlines at station, 3, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.100	-7.000												
1	10.091	-7.000	517.71	517.71	0.00	517.71	0.4759	0.00	-0.09	0.000	14.211	518.70	12.186	496.97
2	9.624	-7.000	567.30	567.30	0.00	567.30	0.5237	0.00	-0.08	0.000	14.668	518.70	12.186	492.59
3	9.154	-7.000	570.04	570.04	0.00	570.04	0.5264	0.00	-0.11	0.001	14.696	518.70	12.187	492.34
4	8.659	-7.000	569.79	569.79	0.00	569.79	0.5261	0.00	-0.14	0.001	14.696	518.70	12.189	492.36
5	8.133	-7.000	569.39	569.40	0.00	569.40	0.5258	0.00	-0.18	0.002	14.696	518.70	12.192	492.40
6	7.571	-7.000	568.80	568.80	0.00	568.80	0.5252	0.00	-0.22	0.002	14.696	518.70	12.197	492.46
7	6.963	-7.000	567.94	567.95	0.00	567.95	0.5244	0.00	-0.29	0.003	14.696	518.70	12.204	492.53
8	6.295	-7.000	566.75	566.76	0.00	566.76	0.5232	0.00	-0.40	0.003	14.696	518.70	12.214	492.64
9	5.546	-7.000	565.17	565.20	0.00	565.20	0.5217	0.00	-0.60	0.004	14.696	518.70	12.226	492.79
10	4.676	-7.000	563.29	563.37	0.00	563.37	0.5199	0.00	-0.97	0.003	14.696	518.70	12.241	492.96
11	3.597	-7.000	559.62	560.00	0.00	560.00	0.5166	0.00	-2.11	-0.007	14.656	518.70	12.236	493.26
hub	3.572	-7.000												

** values of parameters on streamlines at station, 4, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.101	-5.200												
1	10.088	-5.200	520.23	520.23	0.00	520.23	0.4783	0.00	-0.16	-0.002	14.235	518.70	12.188	496.76
2	9.621	-5.200	567.43	567.43	0.00	567.43	0.5239	0.00	-0.13	-0.001	14.667	518.70	12.184	492.58
3	9.152	-5.200	570.50	570.50	0.00	570.50	0.5268	0.00	-0.09	0.000	14.695	518.70	12.182	492.30
4	8.656	-5.200	570.43	570.43	0.00	570.43	0.5268	0.00	-0.04	0.001	14.695	518.70	12.182	492.31
5	8.131	-5.200	569.95	569.95	0.00	569.95	0.5263	0.00	0.02	0.002	14.695	518.70	12.186	492.35
6	7.568	-5.200	568.99	568.99	0.00	568.99	0.5254	0.00	0.08	0.004	14.695	518.70	12.194	492.44
7	6.959	-5.200	567.40	567.40	0.00	567.40	0.5238	0.00	0.14	0.005	14.695	518.70	12.207	492.59
8	6.290	-5.200	564.88	564.88	0.00	564.88	0.5214	0.00	0.18	0.008	14.695	518.70	12.228	492.82
9	5.537	-5.200	560.91	560.91	0.00	560.91	0.5175	0.00	0.17	0.011	14.695	518.70	12.260	493.18
10	4.658	-5.200	554.14	554.14	0.00	554.14	0.5110	0.00	0.08	0.017	14.695	518.70	12.315	493.79
11	3.546	-5.200	531.82	531.82	0.00	531.82	0.4895	0.00	0.02	0.043	14.655	518.70	12.458	495.76
hub	3.507	-5.200												

1

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

** values of parameters on streamlines at station, 5, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.101	-3.700												
1	10.079	-3.700	527.34	527.37	0.00	527.37	0.4852	0.00	-0.65	-0.005	14.254	518.70	12.150	496.15
2	9.615	-3.700	572.23	572.24	0.00	572.24	0.5285	0.00	-0.29	-0.001	14.666	518.70	12.144	492.14
3	9.149	-3.700	575.06	575.06	0.00	575.06	0.5313	0.00	-0.10	0.000	14.694	518.70	12.143	491.87
4	8.656	-3.700	574.83	574.83	0.00	574.83	0.5310	0.00	0.06	0.001	14.694	518.70	12.145	491.90
5	8.134	-3.700	574.28	574.28	0.00	574.28	0.5305	0.00	0.24	0.002	14.694	518.70	12.150	491.95
6	7.575	-3.700	573.19	573.20	0.00	573.20	0.5295	0.00	0.44	0.004	14.694	518.70	12.159	492.05
7	6.970	-3.700	571.16	571.20	0.00	571.20	0.5275	0.00	0.69	0.007	14.694	518.70	12.175	492.23
8	6.305	-3.700	567.66	567.75	0.00	567.75	0.5242	0.00	0.99	0.011	14.694	518.70	12.204	492.55
9	5.556	-3.700	561.98	562.13	0.00	562.13	0.5187	0.00	1.32	0.015	14.694	518.70	12.249	493.07
10	4.681	-3.700	553.27	553.50	0.00	553.50	0.5104	0.00	1.65	0.020	14.694	518.70	12.319	493.85
11	3.581	-3.700	544.21	544.43	0.00	544.43	0.5016	0.00	1.64	-0.003	14.654	518.70	12.358	494.66
hub	3.518	-3.700												

** values of parameters on streamlines at station, 6, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.099	-2.300												
1	10.070	-2.301	538.46	538.49	0.00	538.49	0.4959	0.00	0.59	0.021	14.270	518.70	12.080	495.18
2	9.611	-2.322	577.51	577.51	0.00	577.51	0.5337	0.00	0.09	0.002	14.666	518.70	12.100	491.64
3	9.147	-2.344	580.60	580.60	0.00	580.60	0.5367	0.00	-0.05	-0.004	14.693	518.70	12.097	491.35
4	8.658	-2.366	581.90	581.90	0.00	581.90	0.5379	0.00	0.03	-0.005	14.693	518.70	12.086	491.23
5	8.140	-2.390	582.96	582.97	0.00	582.97	0.5390	0.00	0.28	-0.003	14.693	518.70	12.077	491.13
6	7.588	-2.415	582.94	582.98	0.00	582.98	0.5390	0.00	0.68	0.001	14.693	518.70	12.077	491.13
7	6.991	-2.442	581.10	581.23	0.00	581.23	0.5373	0.00	1.20	0.007	14.693	518.70	12.091	491.29
8	6.335	-2.472	576.58	576.88	0.00	576.88	0.5330	0.00	1.84	0.014	14.693	518.70	12.128	491.70
9	5.597	-2.506	568.14	568.72	0.00	568.72	0.5251	0.00	2.59	0.022	14.693	518.70	12.195	492.46
10	4.730	-2.546	553.47	554.45	0.00	554.45	0.5113	0.00	3.40	0.034	14.693	518.70	12.311	493.77
11	3.623	-2.596	516.62	517.75	0.00	517.75	0.4759	0.00	3.79	0.076	14.653	518.70	12.565	496.96
hub	3.540	-2.600												

1

** values of parameters on streamlines at station, 7, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.100	-1.000												
1	10.065	-1.003	503.22	504.06	0.00	504.06	0.4629	0.00	-3.30	-0.109	14.283	518.70	12.348	498.10
2	9.594	-1.039	567.58	568.25	0.00	568.25	0.5246	0.00	-2.78	-0.067	14.665	518.70	12.176	492.51
3	9.129	-1.075	585.14	585.57	0.00	585.57	0.5415	0.00	-2.19	-0.044	14.692	518.70	12.055	490.88
4	8.646	-1.113	595.39	595.59	0.00	595.59	0.5513	0.00	-1.48	-0.029	14.692	518.70	11.970	489.92
5	8.139	-1.152	601.86	601.89	0.00	601.89	0.5575	0.00	-0.62	-0.017	14.692	518.70	11.916	489.30

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

6	7.601	-1.194	604.58	604.60	0.00	604.60	0.5601	0.00	0.41	-0.006	14.692	518.70	11.893	489.04
7	7.021	-1.239	603.18	603.41	0.00	603.41	0.5590	0.00	1.59	0.004	14.692	518.70	11.903	489.16
8	6.384	-1.288	597.05	597.82	0.00	597.82	0.5535	0.00	2.92	0.015	14.692	518.70	11.951	489.70
9	5.667	-1.343	585.01	586.77	0.00	586.77	0.5427	0.00	4.44	0.026	14.692	518.70	12.044	490.77
10	4.824	-1.409	564.37	567.75	0.00	567.75	0.5242	0.00	6.26	0.041	14.692	518.70	12.202	492.55
11	3.748	-1.492	523.24	529.84	0.00	529.84	0.4876	0.00	9.05	0.061	14.653	518.70	12.471	495.94
hub	3.646	-1.500												

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** values of parameters on streamlines at station, 8, which is the inlet of rotor number, 1 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.034	0.197												
1	9.913	0.164	583.64	584.91	0.00	584.91	0.5409	0.00	-3.79	-0.105	14.295	518.70	11.734	490.94
2	9.490	0.049	633.25	637.42	0.00	637.42	0.5925	0.00	-6.56	-0.025	14.665	518.70	11.586	485.72
3	9.056	-0.008	641.63	643.79	0.00	643.79	0.5988	0.00	-4.70	-0.018	14.691	518.70	11.550	485.06
4	8.599	-0.072	645.20	646.15	0.00	646.15	0.6011	0.00	-3.11	-0.012	14.691	518.70	11.529	484.81
5	8.117	-0.146	645.58	645.82	0.00	645.82	0.6008	0.00	-1.58	-0.007	14.691	518.70	11.532	484.84
6	7.602	-0.228	643.01	643.01	0.00	643.01	0.5980	0.00	0.05	-0.002	14.691	518.70	11.557	485.14
7	7.044	-0.322	636.98	637.30	0.00	637.30	0.5923	0.00	1.80	0.004	14.691	518.70	11.608	485.73
8	6.429	-0.435	627.04	628.31	0.00	628.31	0.5835	0.00	3.65	0.010	14.691	518.70	11.687	486.66
9	5.733	-0.561	612.12	615.15	0.00	615.15	0.5705	0.00	5.69	0.018	14.691	518.70	11.802	487.99
10	4.914	-0.722	589.84	595.71	0.00	595.71	0.5514	0.00	8.05	0.029	14.691	518.70	11.968	489.91
11	3.883	-0.879	557.41	569.50	0.00	569.50	0.5259	0.00	11.82	0.043	14.652	518.70	12.155	492.39
hub	3.762	-0.898												

streamline no.	r/rtip	rel.flow angle (deg)	rel. tang.vel. (ft/sec)	rel. vel. (ft/sec)	rel.mach number	wheel speed (ft/sec)	flow coef.
tip	1.0000					1404.81	
1	0.9879	67.15	1387.87	1506.09	1.3927	1387.87	0.4155
2	0.9457	64.37	1328.60	1473.60	1.3697	1328.60	0.4508
3	0.9025	63.08	1267.79	1421.89	1.3225	1267.79	0.4567
4	0.8570	61.78	1203.88	1366.32	1.2711	1203.88	0.4593
5	0.8089	60.39	1136.40	1307.09	1.2160	1136.40	0.4595
6	0.7576	58.86	1064.27	1243.43	1.1564	1064.27	0.4577
7	0.7020	57.13	986.14	1174.15	1.0913	986.14	0.4534
8	0.6407	55.08	900.00	1097.62	1.0193	900.00	0.4464
9	0.5713	52.53	802.59	1011.22	0.9378	802.59	0.4357
10	0.4898	49.11	688.01	910.07	0.8424	688.01	0.4199
11	0.3870	43.67	543.68	787.35	0.7270	543.68	0.3968
hub	0.3749						

	------ inlet streamline -------				---------- streamline element ----------					
streamline *no.*	*inc. pct.* pass.	*inc. angle* (deg)	*ref. inc.* (deg)	*s.s.inc. angle* (deg)	*in.blade angle* (deg)	*element slope* (deg)	*mach no. at shock* location	*sh.loc. as fract* of s.s.	*cov.chan. as fract* of s.s.	*min.chk. area* margin	*min.chk. pt.loc.in* cov.chan.
1	1.93	1.18	-2.24	-0.93	65.97	-8.82	1.4851	0.6871	0.3129	-0.0050	0.2123
2	8.68	1.23	-2.08	-0.95	63.14	-6.38	1.4480	0.6422	0.3578	0.0011	0.3962
3	15.60	1.86	-1.97	-0.54	61.22	-4.61	1.4005	0.6047	0.3953	0.0083	0.4489
4	22.88	2.41	-1.90	-0.33	59.37	-3.05	1.3575	0.5629	0.4371	0.0084	0.4407
5	30.57	3.12	-1.88	-0.09	57.27	-1.48	1.3172	0.5178	0.4822	0.0073	0.4337
6	38.78	3.88	-1.88	0.03	54.98	0.24	1.2812	0.4684	0.5316	0.0098	0.4059
7	47.68	4.77	-1.90	0.13	52.36	2.12	1.2434	0.4157	0.5843	0.0141	0.3670
8	57.49	5.73	-1.94	0.18	49.35	4.15	1.2109	0.3580	0.6420	0.0259	0.2725
9	68.58	6.77	-2.01	-0.02	45.76	6.46	1.1438	0.2947	0.7053	0.0413	0.2730
10	81.63	7.12	-2.22	-0.37	42.00	9.26	1.0347	0.2296	0.7704	0.0402	0.2532
11	98.06	6.14	-3.03	-1.67	37.53	13.26	0.8731	0.1548	0.7730	0.0544	0.2864

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** values of parameters on streamlines at station, 9, which is the outlet of rotor number, 1 **

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.756	1.778												
1	9.661	1.793	521.01	525.67	465.33	702.04	0.5992	41.52	-7.63	0.059	24.816	619.48	19.533	580.28
2	9.288	1.852	535.70	537.90	437.69	693.48	0.5961	39.14	-5.19	0.042	24.564	609.93	19.377	571.60
3	8.903	1.887	519.70	520.78	429.46	675.01	0.5819	39.51	-3.69	0.030	24.156	604.55	19.263	568.20
4	8.492	1.942	518.33	518.74	435.52	677.33	0.5854	40.02	-2.27	0.022	24.039	601.77	19.118	565.15
5	8.061	2.012	522.44	522.49	448.80	688.78	0.5969	40.66	-0.84	0.016	24.015	599.98	18.931	562.09
6	7.612	2.105	531.48	531.51	476.53	713.85	0.6200	41.88	0.65	0.010	24.141	600.18	18.688	559.48
7	7.138	2.208	533.79	534.18	504.52	734.78	0.6398	43.36	2.21	0.002	24.118	599.60	18.372	556.46
8	6.629	2.331	537.61	538.85	542.25	764.46	0.6678	45.18	3.89	-0.005	24.127	599.46	17.953	552.74
9	6.077	2.476	540.99	543.79	583.50	797.61	0.6999	47.02	5.81	-0.013	24.021	598.37	17.380	547.47
10	5.457	2.608	545.14	550.80	641.90	845.82	0.7470	49.37	8.22	-0.024	23.906	597.42	16.569	540.13
11	4.728	2.703	552.04	563.11	736.87	927.40	0.8280	52.61	11.38	-0.042	23.826	596.99	15.257	528.03
hub	4.664	2.712												

streamline *no.*	*r/rtip*	rel.flow *angle* (deg)	rel. *tang.vel.* (ft/sec)	rel. vel. (ft/sec)	rel.mach *number*	wheel *speed* (ft/sec)	flow *coef.*	head *coef.*	ideal head *coef.*	adiab. *eff.*	diffusion *factor*	loss *coef.*	shock *loss* coef.	element *solidity*
tip	1.0000													
1	0.9902	59.35	887.16	1031.20	0.8801	1352.49	0.3709	0.2688	0.3189	0.8430	0.4322	0.1263	0.0439	1.3046
2	0.9521	58.05	862.66	1016.63	0.8739	1300.35	0.3813	0.2502	0.2884	0.8674	0.4179	0.1012	0.0390	1.3630
3	0.9125	57.48	816.93	968.80	0.8352	1246.39	0.3699	0.2405	0.2712	0.8869	0.4237	0.0859	0.0331	1.4253
4	0.8704	55.45	753.33	914.66	0.7905	1188.86	0.3690	0.2380	0.2624	0.9073	0.4363	0.0721	0.0279	1.4979
5	0.8263	52.45	679.77	857.37	0.7430	1128.57	0.3719	0.2375	0.2566	0.9255	0.4522	0.0603	0.0231	1.5825
6	0.7802	47.94	589.11	793.45	0.6891	1065.64	0.3783	0.2402	0.2573	0.9336	0.4758	0.0576	0.0191	1.6830
7	0.7316	42.81	494.75	728.10	0.6340	999.27	0.3800	0.2397	0.2555	0.9384	0.4996	0.0576	0.0149	1.8063
8	0.6795	35.61	385.85	662.75	0.5789	928.10	0.3827	0.2399	0.2550	0.9408	0.5239	0.0610	0.0118	1.9635
9	0.6229	26.17	267.21	605.90	0.5317	850.71	0.3851	0.2376	0.2515	0.9448	0.5373	0.0638	0.0052	2.1761
10	0.5594	12.50	122.11	564.17	0.4983	764.01	0.3880	0.2352	0.2485	0.9463	0.5290	0.0729	0.0001	2.4929
11	0.4846	-7.59	-74.99	568.08	0.5072	661.88	0.3930	0.2348	0.2471	0.9502	0.4468	0.0860	0.0000	3.0528
hub	0.4780													

streamline no.	pct. pass.	press. ratio	temp. ratio	local blade forces radius (in.)	for.axial (lbs/in)	tang. (lbs/in)	-- out. dev. angle (deg)	stream. -- out.blade angle (deg)
1	1.87	1.7359	1.1943	9.7870	20.5025	-12.1113	5.34	54.01
2	9.18	1.6750	1.1759	9.3891	18.5443	-11.2246	4.94	53.11
3	16.75	1.6442	1.1655	8.9792	16.8583	-10.5517	4.65	52.83
4	24.82	1.6363	1.1601	8.5455	15.6210	-10.1409	4.70	50.75
5	33.28	1.6346	1.1567	8.0892	14.4054	-9.9099	4.91	47.54
6	42.11	1.6432	1.1571	7.6068	13.1701	-9.8967	5.49	42.46
7	51.42	1.6416	1.1560	7.0908	11.6515	-9.7118	6.17	36.63
8	61.40	1.6422	1.1557	6.5289	9.9680	-9.4948	7.24	28.36
9	72.26	1.6350	1.1536	5.9047	8.0075	-9.0424	8.59	17.58
10	84.42	1.6272	1.1518	5.1858	5.6512	-8.3995	10.45	2.05
11	98.74	1.6261	1.1509	4.3056	2.6904	-8.6693	11.84	-19.42

** values of parameters on streamlines at station, 10, which is an annulus **

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.630	3.000												
1	9.575	3.003	568.10	568.64	469.51	737.42	0.6321	39.55	-2.50	0.034	24.803	618.42	19.020	575.14
2	9.227	3.025	574.29	574.64	440.60	724.11	0.6244	37.48	-2.01	0.028	24.556	609.68	18.944	567.87
3	8.863	3.047	558.01	558.17	431.40	705.45	0.6099	37.70	-1.39	0.023	24.156	604.56	18.851	564.85
4	8.475	3.071	555.13	555.16	436.39	706.15	0.6119	38.17	-0.58	0.018	24.041	601.85	18.730	562.03
5	8.068	3.096	556.81	556.82	448.43	714.94	0.6210	38.85	0.32	0.013	24.017	600.08	18.576	559.25
6	7.641	3.122	562.76	562.90	474.73	736.36	0.6409	40.14	1.29	0.008	24.143	600.29	18.374	556.96
7	7.187	3.150	562.36	562.83	501.05	753.54	0.6573	41.68	2.35	0.003	24.120	599.71	18.107	554.32
8	6.698	3.180	563.18	564.28	536.72	778.77	0.6812	43.57	3.58	-0.003	24.129	599.57	17.747	551.07
9	6.162	3.213	563.06	565.29	575.46	806.66	0.7085	45.51	5.09	-0.010	24.023	598.48	17.249	546.41
10	5.560	3.250	564.28	568.59	630.04	848.67	0.7497	47.93	7.06	-0.021	23.908	597.53	16.529	539.85
11	4.860	3.293	567.36	577.12	716.77	920.23	0.8208	51.16	10.55	-0.041	23.829	597.10	15.371	529.21
hub	4.750	3.300												

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** values of parameters on streamlines at station, 11, which is the inlet of stator number, 1, of stage number, 1 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.599	4.066												
1	9.535	4.066	585.76	585.85	471.44	751.98	0.6459	38.82	-0.97	0.013	24.793	617.60	18.797	572.58
2	9.196	4.067	595.13	595.17	442.10	741.40	0.6405	36.61	-0.64	0.016	24.549	609.47	18.692	565.63
3	8.841	4.069	581.04	581.04	432.47	724.32	0.6273	36.66	-0.12	0.016	24.156	604.57	18.591	562.69
4	8.465	4.072	578.40	578.41	436.92	724.89	0.6293	37.07	0.45	0.014	24.042	601.91	18.473	559.94
5	8.070	4.074	579.74	579.84	448.32	732.94	0.6378	37.71	1.07	0.010	24.019	600.16	18.327	557.24
6	7.655	4.078	585.13	585.40	473.82	753.13	0.6566	38.99	1.75	0.007	24.144	600.37	18.137	555.04
7	7.216	4.082	584.21	584.79	499.08	768.80	0.6717	40.48	2.55	0.003	24.121	599.79	17.889	552.54
8	6.741	4.087	584.14	585.23	533.25	791.74	0.6935	42.34	3.50	0.000	24.130	599.65	17.559	549.52
9	6.222	4.092	582.81	584.73	569.84	816.47	0.7179	44.26	4.65	-0.006	24.024	598.57	17.105	545.22
10	5.641	4.099	583.14	586.36	620.94	854.04	0.7549	46.64	6.00	-0.016	23.910	597.62	16.450	539.21
11	4.971	4.101	590.85	595.61	700.78	919.70	0.8201	49.64	7.25	-0.039	23.831	597.19	15.382	529.38
hub	4.840	4.102												

streamline no.	r/rtip	flow coef.	rel.flow angle (deg)
tip	1.0000		
1	0.9933	0.4170	55.84
2	0.9579	0.4236	54.85
3	0.9210	0.4136	54.19
4	0.8818	0.4117	52.29
5	0.8407	0.4127	49.61
6	0.7975	0.4165	45.61
7	0.7517	0.4159	41.15
8	0.7023	0.4158	35.05
9	0.6482	0.4149	27.26
10	0.5877	0.4151	16.07
11	0.5179	0.4206	-0.46
hub	0.5042		

	------ inlet streamline -------				---------- streamline element ----------					
streamline no.	pct. pass.	inc. angle (deg)	ref. inc. (deg)	s.s.inc. angle (deg)	in.blade angle (deg)	element slope (deg)	mach no. at shock location	sh.loc. as fract of s.s.	cov.chan. as fract of s.s.	min.chk. area margin	min.chk. pt.loc.in cov.chan.
1	1.35	12.20	-2.24	5.97	26.63	-0.43	0.9149	0.2453	0.5151	0.1852	1.0000
2	8.49	13.04	-2.08	6.87	23.57	0.14	0.8825	0.2201	0.5703	0.1816	1.0000
3	15.94	13.18	-1.97	7.07	23.48	0.58	0.8586	0.2152	0.5952	0.2208	1.0000
4	23.84	13.16	-1.90	7.08	23.91	1.00	0.8588	0.2123	0.6109	0.2336	1.0000

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

5	32.14	13.08	-1.88	7.06	24.63	1.44	0.8692	0.2104	0.6240	0.2350	0.8811
6	40.85	13.10	-1.88	7.15	25.89	1.98	0.8981	0.2108	0.6332	0.2302	0.8082
7	50.09	13.13	-1.90	7.25	27.35	2.64	0.9228	0.2108	0.6422	0.2353	0.6963
8	60.06	13.31	-1.94	7.50	29.03	3.42	0.9594	0.2096	0.6504	0.2445	0.5927
9	70.96	13.27	-2.01	7.55	30.99	4.29	0.9972	0.2071	0.6608	0.2574	0.3528
10	83.16	12.98	-2.22	7.36	33.66	5.11	1.0534	0.2033	0.6680	0.2621	0.0000
11	97.25	12.56	-3.03	7.07	37.07	5.31	1.1521	0.1948	0.6708	0.2572	0.0000

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** values of parameters on streamlines at station, 12, which is the outlet of stator number, 1, of stage number, 1 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.597	6.336												
1	9.518	6.336	626.76	626.82	-145.44	643.47	0.5491	-13.06	0.82	0.016	24.024	613.36	19.628	580.41
2	9.201	6.337	611.41	611.51	-120.30	623.23	0.5332	-11.13	1.02	0.009	23.779	608.22	19.647	577.27
3	8.864	6.339	588.26	588.35	-103.92	597.46	0.5117	-10.02	1.01	0.000	23.436	604.52	19.651	576.06
4	8.504	6.340	580.85	580.97	-98.17	589.20	0.5053	-9.59	1.17	-0.003	23.326	602.22	19.643	574.53
5	8.127	6.342	579.14	579.34	-95.04	587.08	0.5040	-9.32	1.49	-0.003	23.289	600.62	19.627	573.12
6	7.734	6.344	585.97	586.31	-94.44	593.87	0.5101	-9.15	1.94	-0.003	23.365	600.82	19.612	572.69
7	7.320	6.345	580.52	581.08	-92.79	588.45	0.5054	-9.07	2.52	-0.004	23.271	600.25	19.594	572.63
8	6.876	6.347	573.98	574.85	-94.05	582.50	0.5001	-9.29	3.17	-0.005	23.167	600.11	19.575	573.05
9	6.391	6.349	557.56	558.82	-94.39	566.73	0.4864	-9.59	3.84	-0.006	22.930	599.06	19.548	573.44
10	5.843	6.351	529.73	531.28	-100.87	540.77	0.4636	-10.75	4.38	-0.008	22.559	598.15	19.510	574.83
11	5.181	6.353	471.74	473.20	-116.32	487.28	0.4164	-13.81	4.49	-0.004	21.884	597.73	19.457	578.80
hub	5.043	6.354												

streamline no.	r/rtip	flow coef.	head coef.	ideal head coef.	stator po.ratio	stage po.ratio	stage ad.eff.	diffusion factor	stator loss coef.	shock loss coef.	element solidity
tip	1.0000										
1	0.9918	0.4462	0.2519	0.3189	0.9690	1.6805	0.7898	0.4625	0.1283	0.0000	1.2896
2	0.9588	0.4352	0.2333	0.2884	0.9686	1.6215	0.8091	0.4433	0.1315	0.0000	1.3356
3	0.9237	0.4187	0.2250	0.2712	0.9702	1.5952	0.8294	0.4417	0.1294	0.0000	1.3878
4	0.8862	0.4135	0.2225	0.2624	0.9702	1.5877	0.8482	0.4417	0.1286	0.0000	1.4481
5	0.8469	0.4123	0.2217	0.2566	0.9696	1.5852	0.8639	0.4427	0.1282	0.0000	1.5174
6	0.8059	0.4171	0.2234	0.2573	0.9677	1.5904	0.8681	0.4468	0.1297	0.0000	1.5974
7	0.7628	0.4132	0.2213	0.2555	0.9648	1.5840	0.8664	0.4610	0.1364	0.0000	1.6918
8	0.7165	0.4086	0.2190	0.2550	0.9601	1.5769	0.8589	0.4820	0.1465	0.0000	1.8070
9	0.6660	0.3969	0.2138	0.2515	0.9545	1.5608	0.8499	0.5122	0.1581	0.0000	1.9525
10	0.6089	0.3771	0.2055	0.2485	0.9435	1.5355	0.8269	0.5612	0.1811	0.0005	2.1463
11	0.5398	0.3358	0.1915	0.2471	0.9183	1.4936	0.7748	0.6504	0.2304	0.0073	2.4278
hub	0.5255										

streamline no.	pct. pass.	local blade forces radius (in.)	for.axial (lbs/in)	tang. (lbs/in)	-- out. stream. -- dev. angle (deg)	out.blade angle (deg)
1	1.72	9.5267	2.3036	12.5891	13.02	-26.08
2	8.68	9.1984	1.9452	11.1844	11.33	-22.46
3	16.09	8.8524	1.8651	10.0780	10.60	-20.62
4	23.99	8.4844	1.8665	9.5151	10.17	-19.77
5	32.28	8.0983	1.9164	9.2222	9.85	-19.17
6	40.91	7.6944	2.0805	9.1769	9.71	-18.86
7	50.00	7.2678	2.1879	8.9677	9.59	-18.67
8	59.74	6.8088	2.3256	8.7651	9.57	-18.86
9	70.39	6.3068	2.4268	8.3748	9.49	-19.08
10	82.44	5.7422	2.5138	7.9126	9.62	-20.37
11	96.98	5.0759	2.4395	8.2169	10.43	-24.24

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TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

** values of parameters on streamlines at station, 13, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.603	7.340												
1	9.534	7.340	600.19	600.31	-145.20	617.62	0.5261	-13.60	-1.16	-0.081	24.012	613.03	19.940	582.68
2	9.212	7.340	601.75	601.83	-120.16	613.71	0.5247	-11.29	-0.93	-0.069	23.771	608.09	19.757	578.09
3	8.874	7.340	591.85	591.88	-103.81	600.91	0.5148	-9.95	-0.58	-0.049	23.434	604.50	19.608	575.71
4	8.518	7.340	592.91	592.91	-98.01	600.96	0.5158	-9.39	0.01	-0.031	23.325	602.24	19.503	573.44
5	8.148	7.340	595.88	595.92	-94.79	603.42	0.5187	-9.04	0.73	-0.018	23.288	600.66	19.433	571.61
6	7.765	7.340	604.62	604.83	-94.06	612.10	0.5265	-8.84	1.51	-0.007	23.364	600.86	19.393	570.97
7	7.362	7.340	598.84	599.34	-92.25	606.40	0.5216	-8.75	2.34	0.002	23.271	600.29	19.381	570.95
8	6.931	7.340	589.67	590.59	-93.31	597.92	0.5140	-8.98	3.20	0.010	23.167	600.16	19.395	571.63
9	6.458	7.340	567.79	569.24	-93.41	576.85	0.4955	-9.32	4.09	0.019	22.933	599.11	19.436	572.56
10	5.920	7.340	530.39	532.37	-99.55	541.60	0.4643	-10.59	4.95	0.031	22.566	598.21	19.507	574.81
11	5.259	7.340	456.61	458.95	-114.57	473.03	0.4038	-14.02	5.78	0.047	21.904	597.79	19.609	579.95
hub	5.131	7.340												

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** values of parameters on streamlines at station, 14, which is the inlet of rotor number, 2 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.499	8.707												
1	9.430	8.703	685.89	690.63	-146.80	706.06	0.6063	-12.00	-6.71	-0.041	23.997	612.58	18.782	572.86
2	9.134	8.686	685.26	687.79	-121.18	698.38	0.6016	-9.99	-4.91	-0.020	23.761	607.92	18.664	569.03
3	8.824	8.665	671.43	672.46	-104.39	680.52	0.5870	-8.82	-3.18	-0.012	23.431	604.47	18.613	567.52
4	8.498	8.640	666.29	666.51	-98.25	673.72	0.5819	-8.39	-1.48	-0.004	23.324	602.27	18.599	566.04
5	8.156	8.612	662.23	662.23	-94.71	668.97	0.5783	-8.14	0.21	0.004	23.287	600.71	18.620	564.99
6	7.798	8.581	662.55	662.89	-93.66	669.47	0.5786	-8.04	1.85	0.014	23.363	600.91	18.675	565.13
7	7.420	8.547	648.50	649.67	-91.54	656.08	0.5667	-8.02	3.43	0.023	23.271	600.35	18.768	565.99
8	7.012	8.509	629.78	632.22	-92.23	638.91	0.5511	-8.30	5.03	0.034	23.168	600.21	18.899	567.63
9	6.560	8.465	597.41	601.47	-91.96	608.46	0.5239	-8.69	6.66	0.045	22.935	599.18	19.071	569.63
10	6.041	8.415	548.90	554.77	-97.56	563.29	0.4837	-9.97	8.34	0.058	22.574	598.28	19.278	572.96
11	5.397	8.337	467.96	474.76	-111.65	487.71	0.4167	-13.23	9.71	0.066	21.925	597.86	19.489	578.89
hub	5.265	8.322												

streamline no.	r/rtip	rel.flow angle (deg)	rel. tang.vel. (ft/sec)	rel. vel. (ft/sec)	rel.mach number	wheel speed (ft/sec)	flow coef.
tip	1.0000					1329.87	
1	0.9927	64.79	1466.98	1621.42	1.3924	1320.18	0.5158
2	0.9616	63.84	1399.96	1559.79	1.3437	1278.77	0.5153
3	0.9290	63.35	1339.77	1499.06	1.2931	1235.38	0.5049
4	0.8946	62.64	1287.90	1450.15	1.2524	1189.66	0.5010
5	0.8586	61.83	1236.51	1402.68	1.2125	1141.80	0.4980
6	0.8210	60.79	1185.42	1358.18	1.1739	1091.76	0.4982
7	0.7812	60.11	1130.37	1303.76	1.1260	1038.83	0.4876
8	0.7381	59.51	1073.85	1246.13	1.0748	981.62	0.4736
9	0.6906	59.24	1010.38	1175.85	1.0125	918.42	0.4492
10	0.6360	59.54	943.33	1094.37	0.9397	845.77	0.4128
11	0.5682	61.30	867.26	988.70	0.8448	755.61	0.3519
hub	0.5543						

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

streamline no.	pct. pass.	inlet streamline: inc. angle (deg)	ref. inc. (deg)	s.s.inc. angle (deg)	in.blade angle (deg)	element slope (deg)	mach no. at shock location	sh.loc. as fract of s.s.	cov.chan. as fract of s.s.	min.chk. area margin	min.chk. pt.loc.in cov.chan.
1	1.63	2.76	-2.24	0.22	62.03	-6.58	1.5030	0.6639	0.3361	0.0840	0.7696
2	8.62	2.70	-2.08	0.20	61.14	-4.64	1.4513	0.6387	0.3613	0.0657	0.5905
3	15.94	3.27	-1.97	0.68	60.08	-2.97	1.4149	0.6105	0.3895	0.0754	0.4202
4	23.65	3.82	-1.90	0.99	58.82	-1.31	1.3894	0.5793	0.4207	0.0793	0.3255
5	31.73	4.42	-1.88	1.25	57.40	0.38	1.3673	0.5454	0.4546	0.0827	0.2105
6	40.17	4.92	-1.88	1.30	55.87	2.08	1.3459	0.5095	0.4905	0.0801	0.1869
7	49.10	5.84	-1.90	1.71	54.28	3.75	1.3268	0.4713	0.5287	0.0895	0.1336
8	58.75	6.86	-1.94	2.19	52.65	5.52	1.3124	0.4306	0.5694	0.1048	0.0000
9	69.41	8.12	-2.01	2.94	51.11	7.37	1.3034	0.3876	0.6124	0.1302	0.0000
10	81.67	9.29	-2.22	3.76	50.25	9.33	1.2630	0.3428	0.6572	0.1791	0.0000
11	96.88	8.50	-3.03	3.19	52.80	10.98	1.1967	0.2976	0.6977	0.2541	0.0000

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** values of parameters on streamlines at station, 15, which is the outlet of rotor number, 2 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.374	9.729												
1	9.311	9.733	555.27	557.43	334.22	649.94	0.5151	30.95	-5.04	0.084	38.575	711.32	32.315	678.43
2	9.048	9.749	528.78	529.77	364.12	642.84	0.5116	34.50	-3.51	0.054	38.479	704.70	32.308	672.48
3	8.767	9.772	511.48	511.89	401.07	650.30	0.5188	38.08	-2.27	0.032	38.588	702.10	32.242	669.11
4	8.471	9.798	505.62	505.69	423.04	659.31	0.5273	39.91	-0.98	0.015	38.700	699.54	32.148	665.61
5	8.164	9.827	505.35	505.36	439.97	670.05	0.5373	41.04	0.36	-0.002	38.687	696.84	31.913	661.77
6	7.845	9.859	504.53	504.76	458.52	681.93	0.5476	42.25	1.72	-0.018	38.716	696.23	31.705	659.89
7	7.509	9.897	499.11	499.83	486.50	697.51	0.5610	44.23	3.08	-0.032	38.614	695.79	31.318	657.76
8	7.150	9.941	490.56	492.06	519.00	715.19	0.5758	46.53	4.48	-0.046	38.526	696.20	30.907	656.22
9	6.758	9.993	471.70	474.25	559.12	733.16	0.5914	49.69	5.95	-0.060	38.206	695.71	30.293	653.68
10	6.311	10.056	438.07	441.80	594.55	740.73	0.5986	53.38	7.45	-0.074	37.411	693.96	29.497	651.03
11	5.747	10.143	351.69	356.34	608.52	705.18	0.5706	59.65	9.27	-0.073	35.298	688.28	28.424	649.34
hub	5.647	10.158												

streamline no.	r/rtip	rel.flow angle (deg)	rel. tang.vel. (ft/sec)	rel. vel. (ft/sec)	rel.mach number	wheel speed (ft/sec)	flow coef.	head coef.	ideal head coef.	adiab. eff.	diffusion factor	loss coef.	shock loss coef.	element solidity
tip	1.0000													
1	0.9933	60.10	969.33	1118.18	0.8862	1303.54	0.4175	0.3012	0.3559	0.8463	0.4235	0.1113	0.0468	1.3075
2	0.9652	59.59	902.56	1046.55	0.8329	1266.68	0.3976	0.3039	0.3484	0.8722	0.4441	0.0954	0.0405	1.3486
3	0.9352	58.22	826.26	971.98	0.7754	1227.34	0.3846	0.3134	0.3513	0.8924	0.4724	0.0852	0.0363	1.3934
4	0.9037	56.46	762.90	915.28	0.7320	1185.94	0.3802	0.3173	0.3498	0.9073	0.4932	0.0763	0.0335	1.4441
5	0.8709	54.29	702.98	865.78	0.6943	1142.94	0.3800	0.3174	0.3455	0.9186	0.5098	0.0693	0.0310	1.5014
6	0.8368	51.73	639.73	814.89	0.6544	1098.26	0.3794	0.3158	0.3426	0.9219	0.5300	0.0688	0.0287	1.5668
7	0.8010	48.49	564.73	754.16	0.6065	1051.24	0.3753	0.3164	0.3429	0.9225	0.5570	0.0721	0.0269	1.6428
8	0.7627	44.41	481.98	688.79	0.5546	1000.98	0.3689	0.3177	0.3449	0.9211	0.5896	0.0785	0.0260	1.7342
9	0.7209	39.21	386.95	612.09	0.4937	946.07	0.3547	0.3184	0.3468	0.9179	0.6308	0.0892	0.0264	1.8484
10	0.6732	33.19	288.96	527.91	0.4266	883.50	0.3294	0.3145	0.3437	0.9150	0.6782	0.1019	0.0216	2.0005
11	0.6131	28.83	196.11	406.74	0.3291	804.63	0.2645	0.2951	0.3246	0.9091	0.7559	0.1216	0.0131	2.2239
hub	0.6024													

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streamline no.	pct. pass.	press. ratio	temp. ratio	local blade forces: radius (in.)	for.axial (lbs/in)	tang. (lbs/in)	-- out. stream. -- dev. angle (deg)	out.blade angle (deg)
1	1.69	1.6075	1.1612	9.3705	18.2027	-10.3168	3.49	56.61
2	8.76	1.6194	1.1592	9.0909	17.2680	-10.1276	3.87	55.71
3	16.30	1.6468	1.1615	8.7954	16.6731	-9.9975	4.08	54.14
4	24.23	1.6593	1.1615	8.4843	15.9839	-9.8382	4.22	52.24

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

5	32.47	1.6613	1.1600	8.1598	15.0917	-9.6774	4.34	49.94
6	41.04	1.6572	1.1586	7.8215	14.1027	-9.5297	4.69	47.03
7	50.05	1.6593	1.1590	7.4645	13.0207	-9.3687	5.17	43.31
8	59.68	1.6629	1.1599	7.0807	11.8973	-9.1179	5.92	38.49
9	70.20	1.6658	1.1611	6.6589	10.5402	-8.6684	7.16	32.05
10	82.19	1.6573	1.1599	6.1760	8.9938	-7.7327	10.91	22.27
11	97.31	1.6100	1.1512	5.5723	6.8036	-7.1519	29.70	-0.87

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** values of parameters on streamlines at station, 16, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.315	11.010												
1	9.257	11.010	582.62	582.77	336.17	672.78	0.5344	29.98	-1.31	0.010	38.565	710.52	31.883	675.26
2	9.005	11.010	560.55	560.68	365.85	669.48	0.5339	33.13	-1.24	0.004	38.471	704.52	31.813	669.56
3	8.738	11.010	546.87	546.92	402.38	679.00	0.5429	36.34	-0.81	0.006	38.579	702.03	31.702	666.05
4	8.459	11.010	544.80	544.81	423.62	690.12	0.5532	37.87	-0.32	0.003	38.690	699.54	31.559	662.35
5	8.170	11.010	541.28	541.28	439.64	697.33	0.5604	39.08	0.22	-0.001	38.677	696.92	31.384	658.91
6	7.869	11.010	542.21	542.27	457.14	709.24	0.5707	40.13	0.83	-0.005	38.706	696.32	31.169	656.99
7	7.551	11.010	530.99	531.18	483.81	718.49	0.5788	42.33	1.52	-0.011	38.604	695.87	30.901	655.51
8	7.209	11.010	520.93	521.35	514.75	732.65	0.5907	44.64	2.28	-0.015	38.517	696.29	30.555	654.31
9	6.834	11.010	495.15	495.90	552.88	742.69	0.5995	48.11	3.16	-0.021	38.201	695.80	30.100	652.66
10	6.403	11.010	454.59	455.80	586.03	742.42	0.6000	52.13	4.18	-0.025	37.427	694.07	29.478	650.94
11	5.857	11.010	366.62	368.47	597.17	701.70	0.5675	58.32	5.74	-0.047	35.412	688.54	28.581	649.99
hub	5.763	11.010												

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** values of parameters on streamlines at station, 17, which is the inlet of stator number, 1, of stage number, 2 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.297	11.887												
1	9.232	11.888	604.32	604.35	337.07	692.00	0.5507	29.15	-0.62	0.025	38.556	710.02	31.511	672.71
2	8.986	11.892	580.59	580.64	366.61	686.69	0.5484	32.27	-0.75	0.020	38.462	704.39	31.483	667.60
3	8.726	11.897	565.81	565.84	402.92	694.64	0.5561	35.45	-0.55	0.008	38.569	701.97	31.397	664.31
4	8.455	11.900	563.50	563.50	423.85	705.11	0.5659	36.95	-0.24	0.003	38.680	699.53	31.261	660.70
5	8.173	11.903	560.14	560.14	439.47	711.96	0.5728	38.12	0.15	-0.001	38.667	696.96	31.092	657.34
6	7.880	11.907	561.13	561.16	456.46	723.36	0.5827	39.13	0.58	-0.005	38.696	696.37	30.883	655.46
7	7.572	11.913	550.29	550.39	482.44	731.90	0.5902	41.24	1.10	-0.008	38.594	695.93	30.628	654.04
8	7.242	11.919	540.15	540.40	512.41	744.71	0.6010	43.48	1.75	-0.009	38.508	696.34	30.307	652.97
9	6.881	11.926	513.91	514.45	549.12	752.45	0.6079	46.87	2.61	-0.006	38.195	695.86	29.901	651.57
10	6.467	11.937	472.37	473.38	580.14	748.77	0.6055	50.79	3.74	-0.002	37.442	694.15	29.365	650.27
11	5.954	11.970	392.12	392.87	587.35	706.63	0.5716	56.22	3.55	-0.035	35.529	688.78	28.588	649.69
hub	5.843	11.977												

streamline no.	r/rtip	flow coef.	rel.flow angle (deg)
tip	1.0000		
1	0.9930	0.4544	57.68
2	0.9666	0.4366	56.92
3	0.9386	0.4255	55.35
4	0.9094	0.4237	53.44
5	0.8791	0.4212	51.52

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

6	0.8476	0.4219	49.05
7	0.8145	0.4138	46.38
8	0.7790	0.4062	42.86
9	0.7401	0.3864	38.84
10	0.6957	0.3552	34.50
11	0.6405	0.2949	32.08
hub	0.6285		

	------ inlet streamline -------				------------------- streamline element -------------------					
streamline no.	pct. pass.	inc. angle (deg)	ref. inc. (deg)	s.s.inc. angle (deg)	in.blade angle (deg)	element slope (deg)	mach no. at shock location	sh.loc. as fract of s.s.	cov.chan. as fract of s.s.	min.chk. area margin	min.chk. pt.loc.in cov.chan.
1	1.87	-10.89	-2.24	-16.67	40.04	0.53	0.6331	0.3726	0.5273	0.1513	0.0000
2	8.99	-7.20	-2.08	-12.98	39.47	0.04	0.6513	0.3660	0.5598	0.1855	0.0000
3	16.52	-4.05	-1.97	-9.81	39.50	-0.10	0.6815	0.3614	0.5828	0.2056	0.0000
4	24.38	-2.68	-1.90	-8.40	39.63	0.02	0.7003	0.3553	0.5994	0.2055	0.0000
5	32.54	-1.87	-1.88	-7.55	39.99	0.25	0.7127	0.3492	0.6113	0.2063	0.0000
6	41.02	-1.65	-1.88	-7.28	40.77	0.53	0.7267	0.3444	0.6193	0.1977	0.0000
7	49.95	-0.64	-1.90	-6.21	41.87	0.91	0.7470	0.3402	0.6258	0.2086	0.0000
8	59.51	0.26	-1.94	-5.25	43.22	1.43	0.7720	0.3355	0.6310	0.2170	0.0000
9	69.97	2.08	-2.01	-3.35	44.78	2.22	0.8020	0.3296	0.6367	0.2567	0.0000
10	81.93	3.04	-2.22	-2.30	47.75	3.26	0.8203	0.3255	0.6357	0.3310	0.0000
11	96.79	-0.22	-3.03	-5.40	56.45	1.71	0.7897	0.3333	0.5981	0.4087	0.0000

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** values of parameters on streamlines at station, 18, which is the outlet of stator number, 1, of stage number, 2 **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.303	13.585												
1	9.248	13.584	536.92	536.93	5.16	536.96	0.4235	0.55	0.31	-0.008	37.853	707.83	33.554	685.39
2	8.988	13.580	536.40	536.41	23.33	536.92	0.4247	2.49	0.27	0.000	37.872	703.71	33.547	681.26
3	8.724	13.576	543.02	543.03	37.25	544.30	0.4314	3.92	0.23	0.007	38.025	701.64	33.556	678.55
4	8.455	13.574	547.51	547.51	44.35	549.31	0.4361	4.63	0.32	0.008	38.151	699.47	33.574	675.95
5	8.180	13.573	545.03	545.05	47.54	547.12	0.4350	4.99	0.47	0.008	38.150	697.18	33.594	673.82
6	7.896	13.573	544.86	544.90	49.17	547.11	0.4352	5.16	0.67	0.007	38.173	696.62	33.611	673.26
7	7.598	13.572	535.97	536.04	50.15	538.38	0.4282	5.35	0.91	0.004	38.032	696.18	33.622	673.57
8	7.283	13.572	527.77	527.89	49.66	530.22	0.4214	5.37	1.24	-0.002	37.887	696.59	33.622	674.66
9	6.945	13.572	506.23	506.45	48.02	508.72	0.4039	5.42	1.68	-0.013	37.504	696.13	33.602	675.95
10	6.561	13.573	451.91	452.24	41.39	454.13	0.3599	5.23	2.19	-0.030	36.613	694.53	33.545	678.45
11	6.003	13.583	225.76	225.91	78.10	239.03	0.1885	19.07	2.11	0.003	34.308	689.84	33.488	685.38
hub	5.914	13.584												

streamline no.	r/rtip	flow coef.	head coef.	ideal head coef.	stator po.ratio	stage po.ratio	stage ad.eff.	diffusion factor	stator loss coef.	shock loss coef.	element solidity
tip	1.0000										
1	0.9941	0.4037	0.2885	0.3559	0.9818	1.5774	0.8105	0.4126	0.0998	0.0000	1.2706
2	0.9661	0.4034	0.2932	0.3484	0.9847	1.5939	0.8416	0.4094	0.0846	0.0000	1.3065
3	0.9377	0.4083	0.3036	0.3513	0.9859	1.6228	0.8643	0.4120	0.0759	0.0000	1.3458
4	0.9089	0.4117	0.3078	0.3498	0.9863	1.6357	0.8800	0.4147	0.0713	0.0000	1.3887
5	0.8794	0.4098	0.3080	0.3455	0.9866	1.6382	0.8916	0.4231	0.0683	0.0000	1.4360
6	0.8488	0.4097	0.3064	0.3426	0.9865	1.6339	0.8943	0.4325	0.0670	0.0000	1.4886
7	0.8168	0.4030	0.3063	0.3429	0.9854	1.6344	0.8930	0.4548	0.0705	0.0000	1.5481
8	0.7829	0.3969	0.3066	0.3449	0.9839	1.6353	0.8888	0.4795	0.0756	0.0000	1.6171
9	0.7465	0.3807	0.3060	0.3468	0.9819	1.6352	0.8823	0.5187	0.0834	0.0000	1.6997
10	0.7052	0.3398	0.3001	0.3437	0.9779	1.6219	0.8733	0.5912	0.1026	0.0000	1.8051
11	0.6453	0.1698	0.2763	0.3246	0.9656	1.5648	0.8514	0.8441	0.1759	0.0000	1.9652
hub	0.6358										

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

streamline no.	pct. pass.	local blade forces radius (in.)	for.axial (lbs/in)	tang. (lbs/in)	-- out. stream. -- dev. angle (deg)	out.blade angle (deg)
1	1.62	9.2400	1.3775	7.1196	11.14	-10.59
2	9.30	8.9871	1.8445	7.2331	10.36	-7.87
3	17.09	8.7249	2.3538	7.4581	9.92	-6.00
4	25.00	8.4551	2.6091	7.5111	9.61	-4.98
5	33.12	8.1767	2.7692	7.4998	9.43	-4.45
6	41.52	7.8880	2.9129	7.4736	9.37	-4.21
7	50.30	7.5851	3.1354	7.5066	9.43	-4.09
8	59.60	7.2626	3.3780	7.4775	9.57	-4.20
9	69.60	6.9126	3.6721	7.2928	9.83	-4.42
10	80.93	6.5140	3.7622	6.3946	10.62	-5.39
11	97.40	5.9785	2.6597	5.1590	30.05	-10.97

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** values of parameters on streamlines at station, 19, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.303	14.440												
1	9.248	14.440	541.94	541.94	5.16	541.97	0.4277	0.55	-0.10	-0.004	37.842	707.57	33.466	684.71
2	8.991	14.440	541.12	541.13	23.32	541.63	0.4286	2.47	0.14	-0.001	37.861	703.62	33.465	680.77
3	8.729	14.440	548.04	548.05	37.23	549.32	0.4355	3.89	0.39	0.002	38.014	701.58	33.467	678.07
4	8.463	14.440	553.08	553.11	44.31	554.88	0.4407	4.58	0.60	0.005	38.139	699.46	33.475	675.45
5	8.190	14.440	550.96	551.01	47.49	553.05	0.4399	4.93	0.80	0.007	38.138	697.20	33.489	673.34
6	7.909	14.440	550.78	550.86	49.09	553.05	0.4401	5.09	0.99	0.008	38.161	696.65	33.505	672.78
7	7.614	14.440	541.57	541.68	50.05	543.99	0.4328	5.28	1.17	0.008	38.021	696.22	33.523	673.13
8	7.302	14.440	532.49	532.63	49.53	534.93	0.4252	5.31	1.31	0.007	37.877	696.63	33.540	674.30
9	6.967	14.440	509.18	509.33	47.87	511.57	0.4062	5.37	1.38	0.006	37.499	696.17	33.555	675.75
10	6.585	14.440	452.01	452.14	41.24	454.01	0.3598	5.21	1.34	0.004	36.633	694.58	33.566	678.51
11	6.033	14.440	232.49	232.61	77.71	245.25	0.1935	18.47	1.85	-0.012	34.439	689.99	33.573	685.30
hub	5.947	14.440												

** values of parameters on streamlines at station, 20, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.298	15.700												
1	9.243	15.705	568.37	568.39	5.16	568.41	0.4494	0.52	-0.40	0.006	37.826	707.21	33.033	682.06
2	8.995	15.728	566.43	566.45	23.31	566.92	0.4493	2.36	0.35	0.016	37.845	703.47	33.049	678.43
3	8.742	15.751	570.70	570.79	37.17	572.00	0.4541	3.73	1.01	0.023	37.996	701.50	33.086	675.99
4	8.485	15.774	572.42	572.63	44.20	574.34	0.4567	4.41	1.58	0.028	38.119	699.44	33.142	673.71
5	8.221	15.798	566.75	567.12	47.31	569.09	0.4531	4.77	2.06	0.032	38.118	697.24	33.212	671.97
6	7.946	15.823	562.50	563.02	48.86	565.14	0.4500	4.96	2.47	0.035	38.141	696.70	33.293	671.77
7	7.658	15.849	548.90	549.56	49.76	551.81	0.4392	5.17	2.81	0.038	38.002	696.27	33.383	672.50
8	7.351	15.877	534.79	535.56	49.20	537.81	0.4275	5.25	3.06	0.040	37.860	696.67	33.481	674.11

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

9	7.019	15.907	506.04	506.84	47.51	509.06	0.4042	5.36	3.22	0.042	37.491	696.22	33.586	676.01
10	6.638	15.942	443.98	444.70	40.91	446.58	0.3538	5.26	3.26	0.043	36.666	694.67	33.693	679.11
11	6.084	15.992	229.57	229.86	77.06	242.43	0.1912	18.53	2.88	0.045	34.648	690.23	33.796	685.65
hub	6.000	16.000												

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** values of parameters on streamlines at station, 21, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.319	17.000												
1	9.266	17.010	635.46	637.00	5.15	637.02	0.5060	0.46	3.99	0.109	37.811	706.84	31.866	675.22
2	9.040	17.053	619.42	621.68	23.19	622.11	0.4949	2.14	4.88	0.101	37.829	703.32	32.114	673.14
3	8.808	17.097	611.03	614.02	36.90	615.12	0.4898	3.44	5.65	0.094	37.979	701.41	32.347	671.90
4	8.568	17.143	601.96	605.63	43.77	607.21	0.4839	4.13	6.31	0.089	38.101	699.41	32.573	670.65
5	8.319	17.191	587.22	591.50	46.75	593.35	0.4731	4.52	6.90	0.085	38.100	697.28	32.793	669.80
6	8.059	17.240	574.74	579.60	48.17	581.60	0.4636	4.75	7.42	0.083	38.123	696.75	33.006	670.34
7	7.784	17.293	553.81	559.12	48.96	561.26	0.4469	5.00	7.91	0.081	37.985	696.32	33.217	671.73
8	7.490	17.349	532.69	538.41	48.29	540.57	0.4298	5.13	8.35	0.081	37.844	696.72	33.425	673.92
9	7.168	17.410	497.43	503.32	46.53	505.47	0.4012	5.28	8.77	0.082	37.486	696.28	33.634	676.35
10	6.796	17.481	430.08	435.67	39.96	437.50	0.3464	5.24	9.19	0.086	36.697	694.75	33.838	679.82
11	6.250	17.585	218.79	222.21	75.01	234.53	0.1849	18.65	10.06	0.102	34.833	690.47	34.032	686.18
hub	6.171	17.600												

** values of parameters on streamlines at station, 22, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.406	17.750												
1	9.355	17.764	647.18	656.55	5.10	656.57	0.5224	0.45	9.69	0.135	37.802	706.63	31.511	673.03
2	9.141	17.825	626.99	636.94	22.93	637.36	0.5076	2.06	10.14	0.122	37.821	703.23	31.840	671.55
3	8.920	17.888	614.95	625.66	36.43	626.72	0.4994	3.33	10.62	0.113	37.969	701.36	32.137	670.72
4	8.691	17.953	602.71	614.18	43.15	615.70	0.4909	4.02	11.09	0.107	38.091	699.40	32.417	669.82
5	8.453	18.020	585.22	597.36	46.01	599.13	0.4779	4.40	11.57	0.102	38.090	697.30	32.686	669.28
6	8.204	18.091	570.20	583.06	47.32	584.98	0.4664	4.64	12.06	0.098	38.112	696.77	32.940	670.06
7	7.941	18.165	546.98	560.37	47.99	562.43	0.4479	4.90	12.55	0.096	37.975	696.35	33.190	671.66
8	7.658	18.245	523.80	537.74	47.23	539.81	0.4292	5.02	13.08	0.094	37.836	696.75	33.429	674.02
9	7.349	18.333	487.01	501.15	45.38	503.20	0.3993	5.17	13.64	0.094	37.482	696.31	33.664	676.56
10	6.993	18.434	419.97	433.44	38.83	435.17	0.3445	5.12	14.32	0.093	36.716	694.80	33.886	680.03
11	6.480	18.579	224.14	232.84	72.35	243.82	0.1922	17.26	15.70	0.088	34.940	690.62	34.072	685.98
hub	6.406	18.600												

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TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

** values of parameters on streamlines at station, 23, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.572	18.500												
1	9.523	18.519	627.35	649.60	5.01	649.62	0.5166	0.44	15.04	0.111	37.794	706.42	31.626	673.53
2	9.318	18.599	609.67	632.55	22.50	632.95	0.5040	2.04	15.45	0.113	37.812	703.14	31.909	671.90
3	9.106	18.681	598.53	622.21	35.69	623.23	0.4965	3.28	15.86	0.111	37.959	701.31	32.189	671.01
4	8.889	18.766	586.52	610.97	42.19	612.43	0.4882	3.95	16.27	0.108	38.080	699.38	32.465	670.12
5	8.663	18.854	569.02	594.06	44.90	595.75	0.4751	4.32	16.69	0.104	38.079	697.32	32.734	669.62
6	8.426	18.946	553.95	579.75	46.07	581.58	0.4635	4.54	17.16	0.101	38.102	696.80	32.988	670.40
7	8.177	19.043	530.66	556.95	46.61	558.90	0.4450	4.78	17.67	0.098	37.965	696.37	33.238	672.00
8	7.910	19.147	507.48	534.42	45.73	536.38	0.4263	4.89	18.27	0.097	37.827	696.78	33.475	674.33
9	7.619	19.260	471.02	498.09	43.77	500.01	0.3967	5.02	18.97	0.097	37.479	696.34	33.708	676.84
10	7.285	19.390	405.82	431.54	37.27	433.14	0.3429	4.94	19.88	0.099	36.736	694.85	33.929	680.22
11	6.813	19.574	223.52	240.57	68.81	250.22	0.1973	15.96	21.70	0.111	35.047	690.77	34.130	685.89
hub	6.745	19.600												

** values of parameters on streamlines at station, 24, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	9.812	19.250												
1	9.766	19.274	596.46	639.77	4.89	639.79	0.5085	0.44	21.20	0.151	37.785	706.21	31.791	674.31
2	9.573	19.374	576.61	618.77	21.90	619.16	0.4925	2.03	21.27	0.128	37.803	703.04	32.140	673.15
3	9.374	19.478	565.70	607.51	34.67	608.50	0.4843	3.27	21.38	0.111	37.949	701.25	32.434	672.38
4	9.169	19.585	555.25	597.03	40.90	598.43	0.4766	3.92	21.56	0.100	38.069	699.37	32.695	671.43
5	8.957	19.695	539.92	581.64	43.42	583.26	0.4648	4.27	21.83	0.092	38.068	697.35	32.935	670.80
6	8.735	19.810	527.44	569.71	44.44	571.44	0.4552	4.46	22.21	0.086	38.090	696.83	33.146	671.34
7	8.503	19.931	506.72	549.34	44.82	551.16	0.4386	4.66	22.72	0.083	37.955	696.40	33.353	672.70
8	8.257	20.060	486.27	529.79	43.80	531.60	0.4224	4.73	23.39	0.081	37.818	696.81	33.541	674.76
9	7.991	20.198	452.87	496.79	41.73	498.54	0.3955	4.80	24.27	0.081	37.476	696.37	33.727	676.99
10	7.689	20.355	392.72	435.26	35.31	436.69	0.3457	4.64	25.54	0.084	36.757	694.90	33.904	680.03
11	7.280	20.568	232.94	264.76	64.40	272.48	0.2150	13.67	28.38	0.094	35.158	690.94	34.070	685.15
hub	7.219	20.600												

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** values of parameters on streamlines at station, 25, which is an annulus **

streamline no.	radius (in.)	axial coord. (in.)	axial vel. (ft/sec)	merd. vel. (ft/sec)	tang. vel. (ft/sec)	abs. vel. (ft/sec)	abs. mach no.	abs.flow angle (deg)	stream. slope (deg)	stream. curv. (1./in.)	total press. (psia)	total temp. (deg.r.)	static press. (psia)	static temp. (deg.r.)
tip	10.149	20.000												
1	10.106	20.027	518.76	580.55	4.72	580.57	0.4597	0.47	26.68	0.067	37.776	706.01	32.785	679.76
2	9.916	20.146	512.37	570.00	21.14	570.39	0.4523	2.12	25.99	0.058	37.794	702.95	32.946	677.60
3	9.721	20.268	512.48	568.09	33.43	569.07	0.4518	3.37	25.56	0.051	37.939	701.20	33.082	675.95
4	9.523	20.393	511.23	565.84	39.38	567.21	0.4509	3.98	25.38	0.046	38.058	699.35	33.204	674.26
5	9.320	20.520	503.64	557.55	41.73	559.11	0.4448	4.28	25.41	0.042	38.057	697.37	33.321	672.98

TABLE 3 - EXAMPLE OUTPUT DATA SET(with stator resets)

6	9.111	20.651	498.27	552.66	42.61	554.30	0.4410	4.41	25.63	0.040	38.079	696.85	33.415	672.88
7	8.894	20.788	483.95	538.76	42.85	540.46	0.4298	4.55	26.07	0.038	37.945	696.43	33.513	673.64
8	8.666	20.930	469.82	526.08	41.74	527.73	0.4192	4.54	26.74	0.037	37.809	696.83	33.592	675.11
9	8.424	21.082	443.13	500.55	39.59	502.11	0.3984	4.52	27.71	0.037	37.473	696.41	33.673	676.74
10	8.156	21.250	392.24	449.29	33.29	450.52	0.3569	4.24	29.19	0.038	36.778	694.96	33.746	679.13
11	7.813	21.465	260.22	308.57	60.00	314.35	0.2483	11.00	32.51	0.041	35.268	691.10	33.821	683.40
hub	7.758	21.500												

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An off-design axial-flow compressor code is presented and is available from COSMIC for predicting the aerodynamic performance maps of fans and compressors. Steady axisymmetric flow is assumed and the aerodynamic solution reduces to solving the two-dimensional flow field in the meridional plane. A streamline curvature method is used for calculating this flow-field outside the blade rows. This code allows for bleed flows and the first five stators can be reset for each rotational speed; capabilities which are necessary for large multi-stage compressors. The accuracy of the off-design performance predictions depend upon the validity of the flow loss and deviation correlation models. These empirical correlations for the flow loss and deviation are used to model the real flow effects and the off-design code will compute through small reverse flow regions. The input to this off-design code is fully described and a user's example case for a two-stage fan is included with complete input and output data sets. Also, a comparison of the off-design code predictions with experimental data is included which generally shows good agreement.

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